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# Worldwide Report

ENVIRONMENTAL QUALITY

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20 April 1983

WORLDWIDE REPORT  
ENVIRONMENTAL QUALITY

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PHILIPPINES

MARCOS URGES LAW REGULATING TOXIC WASTE

Manila PHILIPPINES DAILY EXPRESS in English 13 Mar 83 pp 1, 2

[Text] PRESIDENT MARCOS urged the Batasang Pambansa yesterday to pass a law regulating or, if necessary, banning the importation of non-biodegradable substances used in the manufacture of soap, detergents, fertilizers and allied products.

In a letter to Majority Floorleader Jose D. Rono, the President said the proposed legislation should likewise regulate the disposal of newly generated toxic wastes so as to ensure the lives, health and safety of the people.

Examples of non-biodegradable substances are fiberglass, formalin, plastics and nylons.

"Toxic waste disposal is a matter of national concern - a life-and-death matter that affects everyone from babies to the most elderly," the President said.

THE PRESIDENT observed that the unregulated and indiscriminate importation and utilization of non-biodegradable substances or elements (which do not dissolve easily) by persons, corporations, associations or other entities engaged in the manufacture of soap, detergents, and fertilizers pose a potential, if not present, hazard to public health and safety.

It is therefore imperative, he said, that corrective measures be immediately implemented before such potential danger reaches uncontrollable proportions.

"It is sad to state that we are one of the few countries in the world who have not yet awakened to this national nightmare of toxic wastes," the President said.

CSO: 5000/4316

INDUSTRIAL WATER POLLUTION RATE CONTINUES

Manila BULLETIN TODAY in English 22 Mar 83 p 28

[Text]

Dumping of industrial wastes into water bodies still continues unabated, the National Pollution Control Commission disclosed.

Brig. Gen. (ret.) Guillermo Pecache, NPCC chairman, said that of the 4,050 industrial firms all over the country, 1,035 pollute rivers, bays, lakes, and streams.

Some 1,670 firms were described as potential air polluters, Pecache said.

In a survey of 129 principal rivers of the country, 45 were found to be polluted due to industrial wastes.

The problem was reported to be critical in Metro Manila, particularly in the Tullahan-Tinajeros river, San Juan river, Pasig river, and Laguna lake.

About 750 of the 1,700 industrial firms in Metro Manila and 285 of the 2,350 firms scattered all over the country contribute to water pollution, the NPCC said.

The mining industry, composed of 30 active mines, was reported as a major industrial polluter.

Wastes are either impounded on land or disposed of at sea.

Quoting a study, Pecache noted that about 60 to 70 per cent of pollution in most rivers in highly urbanized areas can be attributed to domestic sewage and other wastes due to lack of sanitary sewers. Only 12 per cent of the population in Metro Manila is served by a sewerage system, he noted.

Cement factories, on the other hand, were identified as a source of air pollution. Eighteen cement plants reportedly cause cement dust pollution in their immediate vicinities, the NPCC head said.

However, motor vehicles are still the major sources of air pollution in the country, particularly in Metro Manila and other urban centers. They contribute about 60 per cent of total air pollution load in the metropolis.

Pecache said that the extensive use of chemical fertilizers and pesticides pollute the land.

## DETERIORATION OF ENVIRONMENT

Manila BULLETIN TODAY PHILIPPINE PANORAMA in English 13 Mar 83 pp 22-27

[Article by Gilda Cordero-Fernando: "You Never See a Firefly Anymore"]

[Text] Then God said "Let the waters below the heavens be gathered into one place and let the dry land appear." And so it was. God called the dry land Earth and the assembled waters Seas. And God saw that it was good. Then God said: "Let the earth bring forth vegetation: seed-bearing plants and all kinds of fruit trees that bear fruit containing their seed." And so it was. The earth brought forth vegetation, every kind of seed-bearing plant and all kinds of trees that bear fruit containing their seed. God saw that it was good. And there was evening and morning, and it was the third day.

— The Book of Genesis

**F**IREFLIES USED to visit every Filipino garden; if you lived in the outskirts of the city, sometimes hundreds of them hovered over a *champaca* tree. Little girls caught those that descended in handkerchiefs or cupped palms, the better to see them winking away in a dark room. Up to the early sixties, large-headed *cabesoite* birds

would fly into the garden by October, perching on the mailbox, shitting on the mail. A feature of every pre-war home was a noisy green parrot or a *kulasisi* dancing in a cylindrical bamboo cage, the inevitable gifts of provincial folk. Where have they all gone?

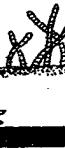
What ails the big *santol* tree at the corner which used to pour out all its love in hundreds of yellow fruit? This year the tree bore barely two dozen fruits but perhaps that is understandable: the intersection on which it stands has become a thoroughfare — a congestion of jeepneys and buses belching noxious fumes that mingle with the soot and ash from *ihaw-ihaw* stands and with the aerosols and harmful mists of the highly developed neighborhood. Various painted signs are tacked crudely on to the tree's trunk; sunshine struggles through a curtain of suspended filth to touch leaves clogged with dust and grime.

Within one's premises, the combined power of taken-for-granted household insecticides (like

*katol, Off, chemicals for fogging mosquitoes, malathion and foliolol for spraying one's orchids and houseplants, and chemical sprays for termites) kills all but the hardest of worms and bugs and keeps the rest at bay. Pesticides do not differentiate between a tick, a leaf borer, a gnat, a worm or a firefly. They are all insects. No caterpillars equals no butterflies, and no insects equals no food for birds to eat and they fly to more hospitable parts. Parrots are similarly beleaguered — there are less and less coconut trees in settlements. There are fewer young developing nuts to feed on because the trees fruit less. Some coconut trees are simply sterile crowns, thanks to pollution.*

One dreams of the crisp leafy salads of Baguio — what rich nutrition! — never wondering why the lettuce leaf is so large, without holes or blemish. Because one per-

fect leaf is loaded with enough pesticides to kill a dozen hungry caterpillars. Of course, you can always wash the leaves, which removes some of the pesticides on the surface, but a greater part of the chemicals have become assimilated by the leaf and can never be washed off. Eating green salad will not make you drop dead, it will not kill you next month, maybe not even next year, but it will eventually get you. We can expel only so much toxin from the body, the rest is tolerated and becomes a part of our protoplasm, becoming carcinogenic only when the tolerance limit is exceeded. In studies conducted in Los Baños where the IRRI experimental station tests all the most dangerous pesticides dumped by Western economies on the Third World, it was found that the nursing mothers had a high concentration of pesticides in their milk and were in effect feeding their

Water	Fishes	Invertebrates	Plankton
clear fresh	<i>bangus</i> or <i>milkfish</i> <i>lepo-lepo</i> <i>sidang dapa</i>	 	  
cloudy muddy	<i>salag</i> <i>tilapia</i> <i>lato</i>	 	  
sewage sludge	<i>platija</i> <i>aluminum</i> <i>rubber</i> <i>glass</i>	 	  

Philippine Fishes in Different Habitats

babies polluted milk straight from Mommy's breast.

Pesticides -- like all the rubbish on the face of the earth--are washed down by rain to the creeks and rivers, eventually finding their way to the lakes and the sea. These and the discharges of factories, of mines and households, leave their residue in fish, crustaceans and mollusks which are consumed by man. When accumulated in certain organs these toxic substances produce diseases whose origins puzzle our physicians no end. Kidney damage and cancer from eating crabs? Rubbish indeed!

DDT is absorbed by plants and insects which are devoured by fish. The fish may pass the poison on to the birds that feed on fish. Birds affected by DDT have been known to become infertile or to lay soft-shelled eggs that are impossible to hatch, beginning the extinction of a species. Methyl mercury, an industrial waste, is eaten by little fish who are eaten by bigger fish and other bigger fish until the mercury concentrate becomes harmful. The biggest fish is steamed and served with mayonnaise on someone's birthday. There are still other food chains. Plants that have assimilated pesticides are eaten by herbivores whose meat is eaten by humans. That is why many health buffs are vegetarians -- they like to eat low on the food chain -- you can only eat three or four bowls of salad daily but the cow you eat can consume as much as 25 kilograms of pesticide-loaded vegetation a day.

By the year 2000 experts believe that a big area of the world would have greatly depleted its vegetation and wild life. What would increase would be the fauna associated with man -- the scavenging *mayang bato* that eat the rubbish and the left-over dog food in the yard, will fill the ecological niches left by the more sensitive and beautiful disappeared species. Even today delicious fresh water fish like *kanduli* are already in short supply. If man's habits don't change, *bangus* too could disappear with pollution since *bangus* spawn in neither fresh nor brackish water -- they lay eggs three kilometers out in the open sea. The young swim back to the coast and are killed by pollutants. Malabon and Navotas used to be fertile grounds for *bangus*. No one ever worried about obtaining fry which came in through the Malabon and Navotas rivers -- two tributaries which today are in death throes.

The tiny *sinarapan* fish of Lake Buhi will become extinct, according to the experts, but the guppies, tough denizens of canals, will thrive and multiply. The *dalag*, that hardy black fish that thrashes in the market basket hours after it has been conked on the head, survives even in highly polluted areas. Surely another survivor will be the highly adaptable *hito* that can stay alive in a dry river bed by burrowing its way two feet down and living for months in the mud below. *Tilapia* too will join the others to the New Age -- dark and ugly, toughies all.

There are more than 40 dead rivers in the Philippines. What

does a dead river look like? A conservationist visited a river he used to swim in as a boy. It had turned black. The surface was covered with oil and layers of filthy plastic bags that would never biodegrade, smothering whatever life of fish or plant there could be underneath. Foul-smelling silt overflowed the banks. The conservationist's wife looked at the river wordlessly and shuddered.

Ecology experts are of a mind, however, that the pollution of air, land and water (with water as the worst), is still not as much of a problem as other environmental concerns. They are just the more visible. More alarming because it is already here are two forerunners of the Apocalypse: Soil erosion in our mountains and our disappearing mangrove swamps and coral reefs.

"The way we exploit our forests in the uplands, it is as if there were no tomorrow," says Dr. Celso R. Roque, director of the National Environmental Protection Council and a concerned environmentalist. "An alarm was raised about these impending calamities many years ago, but the authorities vacillate on it--there's still logging being permitted, we are still exporting logs.

"For the last ten years we have been losing our forests at the rate of 70,000 hectares a year due mainly to illegal logging and the activities of Kaingeros. Forestry figures state that recently they have reversed the trend, that there is now a balance of trees due to reforestation. According to them, 30,000 hectares a year net are reforested--that's how the figures go.

"During the sixties and seventies the average was about 170,000 hectares deforested per year. Since 1970, they say, the trend has been reversed so that now although we deforest 60,000 hectares a year, we are reforesting more so that we have a net of 30,000 hectares. It's a nice way of presenting the figures, but examining them closely there's a backlog of 5,000,000 hectares of already denuded area. So, if you divide 5,000,000 hectares by a balance of about 20,000 hectares net, and considering that not all trees that are planted grow, my guess would be lower, say, a net reforestation of only about 10,000 hectares. If indeed 10,000 hectares net are reforested, and we have a backlog of 5,000,000 hectares, that means we will be able to reforest in 500 years. By that time all the upland soil will have been lost."

Says Dr. Dioscoro Rabor, ecologist and wildlife specialist: "Forests don't grow just like that. You make a disturbance and it takes time to heal. An area that has been completely denuded will not immediately grow back into a primary forest with the thick stand of hefty trees that it originally had. A primary forest is created in two stages. In the first 200 years what will grow is a secondary forest with lighter trees and a different flora because it gets the sun fully and conditions are different. And nother kind of fauna

will inhabit it, not the same animals that lived in the original vegetation. If the forest is left alone, the wind and the birds, natural pollination, will carry primary seeds in from other areas. All dipterocarp trees grow in the shade of secondary trees. After 300 more years--or a total of 500 years--the forest will show a semblance of restoration to its original state."

"Our reforestation is actually a short cut method of this two-stage process," continued Rabor. "It introduces the dipterocarp seedlings to the barren land--the cogon and talahib growth. The BFD is spending a lot but out of 1,000 seedlings only ten percent survive and that's already very good. For two consecutive years all the faculty and students of UP Los Banos were required to climb Mt. Makiling, the badly denuded and eroded side facing Batangas, and plant their 12 seedlings quota. The planting is timed in March or April when there are no rains so that the students don't get sick. The seedlings are left on the mountain. Since no one takes care of them, they're drowned by the weeds. In ten days they're all dead. So the law requiring school children to reforest has been repealed because it's an exercise in futility.

"If you don't touch anything, if you do not cut a single leaf and don't re-plant because that only alters the ecosystem and delays natural recovery, the forest will grow. But as it is we will never be reforested because as we are reforesting we are also cutting."

"We were born to such rich natural resources," says Dr. Roque, "that our culture in the provinces is not bothered by someone going into the woods to cut trees to build his house, or to the mangrove swamps for firewood. If a rural

child sights a hawk or any bird his natural instinct is to shoot it down, even with a sling shot. Some bored soldiers even use eagles for target practice. No one is bothered — after all, their fathers and their forefathers used to get all the wood and shot all the birds they wanted and nothing happened, so how could anything happen now?

"*Kaingin* is the major reason for the soil erosion that denudes the slopes, produces sand expanses and causes flooding. The number of *kaingeros* is alarming," explains Roque. "The estimate is that some 400,000 families are engaged in *kaingin* or slash-and-burn agriculture today. We are running out of agricultural land so people are invading the forest.

Mt. Apo is occupied almost to the very top and that's a national park! Our forefathers practised *kaingin* — it was an ecologically sound practice then since only a small segment of the population was engaged in it.

"All our national parks, including Mt. Kanlaon, are being utilized by *kaingeros* because we are already 50 million people and there are only 30 million hectares total area of land. It's a very small ratio—and that land already includes the mountain tops and the useless islands, the airports, the human settlements, the grazing land and the forests. It means that we have only 0.6 hectares to feed us per capita, or about one-half hectare per person. If

we count actual agricultural land only then we have even less—ten million hectares—which means we have only 0.2 hectares per capita to feed on!

"The nature of a dipterocarp forest is that its organic layer is only about two feet thick," Dr. Rabor explains the mobile character of the *kaingero*. "The first time it is used the soil is very fertile, but in the second and third years the soil progressively degenerates. That is why the *kaingero* abandons it after three years and starts in another place. With no roots to hold the soil together on the abandoned mountain slope, everything is washed down by hard rains. Only barren rocks remain. As the mountain gets more denuded there is uncontrollable flooding down below."

"The trouble is, the *kaingeros*, who are not our tribes, mind you, but settlers," explains Rabor, "not only practice swidden agriculture, they also cut all the trees they can to sell them because they need a livelihood. The irony is that when the tall trees are felled in an area, it becomes easier for the next *kaingero* to cut down the smaller trees and start a new *kaingin*."

"All this is prohibited," explains Roque. "There are supposed to be forest rangers, but they are very few—each one guards about 4,000 hectares without any vehicles, and has to contend with well-armed, well-equipped illegal loggers. Like all government employees, these guards are poorly paid, so it is not surprising to find some of them con-

sorting with the loggers.

"When a ban is declared matters sometimes become worse. The concessionaire withdraws his guards, and so the little loggers come in like vultures. In Pakil, Laguna, the illegal loggers use carabao sleds so that they can pass through paths hidden from the highway where they're liable to be stopped. It's every man for himself and hang tomorrow."

"If an area is logged properly," clarifies Roque, "if the loggers are following the rules, the forest is not supposed to be denuded. In selective logging you leave a composition of trees, some big some small, according to a certain formula such that the forest will recover after a certain period. This was done by logging firms with a conscience like PICOP and Nasipit who are only now going into their second cycle cut (the cycle is every 35 years). When you log a certain area and proceed to log another area, after 35 years you can come back to the same area without doing anything to it but a timber stand improvement so that the commercial trees will grow healthy and not compete with the others for food. So this means that since they're the only company that's going into a second cycle cut and since foresting is an old industry in the Philippines, everybody else is disregarding the rules.

"In the coastal areas are other endangered biological systems," continues the director of the National Environmental Protection Council. "The shore is impor-

illegal but widely practised, simply blasts the beneficial corals to death. Electrocuting the fish with a live wire also kills them. Then there are the chemicals and poisons. All those beautiful tropical fish you see in aquarium shops are obtained by temporarily stunning the fish with a chemical. The trouble is that the chemical remains in the water long after the fish have been gathered and it harms the corals. Because of these there are indications of a declining fish catch. Some badly deteriorated fishing grounds have been ordered closed to commercial fishing by the Ministry of Natural Resources.

"We made an ocular survey of the coral reef and calculated that about one-half of our corals are in precarious condition, meaning that less than 25 percent of them are still alive. In Cebu, for instance, not only are corals dynamited, electrocuted and poisoned along with the fish, they are also made into beautiful construction blocks for buildings. Corals that died long ago are used for these building blocks but when they are pried up all the new corals around them die too. Some prominent buildings you see in Quezon City are finished with coral bricks.

"To think we have the world's richest coral formation and how we plunder it! We have 400 coral species—more than are found in the Great Barrier Reef of Australia! To drive home a point, we are the only country in the world exporting corals and even Australia is importing corals from us. But we have had to ban their export recently because of their endangered condition. Tourist

shops have been given a grace period in which to sell their present coral stock. But again because of political pressures we've had to exempt the Muslims of Mindanao from the ban. Gathering corals is their only means of livelihood, according to some people. A lot of pressure also comes supposedly from rebels who have surrendered. But actually Muslim gatherers make a mere pittance—it's the traders who rake it in.

"How ironic to note that the only thing helping the environment is the bad peace and order situation in some places. The coral formations in the small islands of Jolo are in robust health—you cannot walk on the beach from the undisturbed flocks of sea urchins. This is also true in NPA-held territories—no one can log because one might get shot or kidnapped, so the forest remains lush.

"And now a little about mine tailings. Our copper from Baguio's mining district has a concentration of 0.3 percent, meaning that 99.7 percent of what is dug out has to be thrown away as refuse. The tailings end up in the rivers of the Mt. Province, flowing down to farmlands in Pangasinan, La Union and Ilocos Norte, silting the irrigation works. One mining company was asked to build a retaining dam to contain these mine tailings but it couldn't do that because of the topography. The mine was ordered shut down and was fined and the farmers were awarded damages. But then the closure lasted only three days. There was a lot of pressure from the labor that depended on it and other concerned quarters. So you see how an ecological problem is

also a political problem.

"If they don't watch out, the next ecological disaster will be Negros. The policy of the sugar mills in Negros island is to buy as much wood as they can from everybody to fuel their sugar mills with because electricity has become too expensive. So there is a thriving industry of illegal logging. You can't even sell seven-year-old *ipil-ipil*, you will be undersold by the colorum loggers who have heavier and cheaper logs. The rate of deforestation is hair-raising. We've suspended all logging permits. But people keep on secretly cutting, truckload after truckload comes into town daily to fuel the ever-burning mills. If they don't heed the warning signals, it will one day flood in Negros and all their plantations and sugar mills will be swept away. A large part of our sugar industry is in Negros, and if that collapses a major part of our economy goes too.

"But no one seems to be afraid.

You know how Filipinos are, we don't care what will happen tomorrow. The heads of the sugar mills are under pressure to show profits to their stockholders.

If they can't afford oil, then it must be wood even if it means cutting down every tree in the place.

"So what is the final end if no one listens? If soil erosion continues we will have a decreasing capacity to produce food. Since we are an ever growing population this is a very volatile combination. It will no longer be the environment determining our fate, it will be the people. When hunger takes over there is bound to be political upheaval. If we continue to dynamite fish, to gather corals to use for construction, the productivity of the coastal areas will pursue its deathly decline. If the mines in Baguio continue to silt the farmlands, will the farmers of La Union and Pangasinan take it forever?

We may as well read the scenario of the Apocalypse. ●

CSO: 5000/4316

MINISTER PROPOSES PLAN TO PROTECT FORESTS

Manila BULLETIN TODAY PHILIPPINE PANORAMA in English 13 Mar 83 p 24

[Text]

**T**O SOLVE the problem of slash and burn or *kaingin* farming, Minister of Natural Resources Teodoro Q. Peña has recommended a social forestry plan that has been praised even by foresters abroad. It is a pragmatic solution that no longer hold public forest lands tenantless and inviolable since one cannot realistically drag out the 400,000 families who are currently entrenched in those mountains and are in fact burning the whole forest. The idea is to protect the environment by giving the *kaingero* assistance in the form of technology, financing and marketing so that he will remain sedentary as a cultivator, thereby introducing the concept of community.

The forest land the *kaingero* lives on will be leased to him by the government on a "stewardship" basis with a tenure of 25 years, renewable for another 25, just like

the logger's. Indigenous, economically feasible and environmentally sound forest technologies will be introduced to stabilize upland farming and develop income-generating projects. A pilot project has been started in Butuan. Nasipit pays the steward a certain sum every time a tree grows to a certain height, since the problem with agri-forestry is that there is no income to live on during the 30 years that the *lawaan* or narra or *apitong* are growing.

On the other hand, a strict monitoring of exports permits has been ordered by the Central Bank and on-the-spot checks made of outgoing logs. Minister Peña has also recently filed criminal charges and ordered the cancellation of the timber licenses of two logging firms operating in Surigao for the reported smuggling of P8 million worth of logs to Japan from a point in Surigao del Sur. ●

CSO: 5000/4316

## ECOLOGICAL EFFECT OF ONE TREE'S LOSS EXAMINED

Manila BULLETIN TODAY PHILIPPINE PANORAMA in English 13 Mar 83 p 36

[Article by GCF: "When You Cut Down One Tree"]

[Text]

**W**HEN ONE BIG tree is cut down in a primary forest the ecosystem around it suffers such an imbalance that it takes a long time for nature to recover. In the immediate area the effects are keenly felt, becoming less and less as one goes farther. When the big tree falls to the ground some small trees are inevitably smashed to death. Sun comes into that gap in the forest. This encourages new plants to grow, but for young dipterocarp trees who like the shade of a parent plant, it will be rough going. There will be less total oxygen and water vapor given up to the ecosystem around the absent tree. For the inhabitants of the tree it is like losing their home to an Intensity 10 earthquake. And along with their homes, their source of daily subsistence.

Each tree is like a condominium—close to 50 species may occupy one tree, each in its own niche. A tree may be the favorite of some animals, the same ones every day who go there to feed. At the base of the tree may live the pitta, a chick-like bird that likes to pace

the forest floor. Among the buttressing root of the dipterocarp may be found an anti-social King Cobra, coiled into itself, or a treacherous python slithering around its nest of leaves. Wild pigs, and deer, even a civet, may make their homes among the large roots or take shelter in the basement when overtaken by the dark. Certainly, as in any condominium, there will be a couple of rats.

The trunk is the domain of the woodpeckers who live in round holes on different floors. Flying lemurs (*kagwang*) too may occupy a rotten apartment in a dried up hollow branch. For the big squirrels the trunk is an elevator to scurry up and down from; for slow pigmy squirrels it is an all-day journey from the base to the crown of a 200-foot-tall dipterocarp tree. Anyway there are delicious snacks all along the way—lizards and insects and bugs and worms for the squirrels and the birds; birds and fruits for everybody. Some birds eat leeches and the monkeys eat the rats. Moths and butterflies are fair game for supper, too.

Monkeys may live with imme-

diate or extended families in the thick crown of an *apitong* which is of course a dipterocarp tree. So may two kinds of hornbills, three species of green parrots and three of pigeons. Or it may be just a tree they habitually visit, like a drive-in during dinnertime. A family of bats living in the crown may be looking at the world upside down hanging like morbid trinkets on a condemned Christmas tree. On the top of the canopy may live the eccentric of the tree condominium—the brain-fever bird, so named because of its fevered cries of *Pito-pit! Pito-pit!* And all of the animals help the tree by shitting its seeds on the soil and enlarging the tree's progeny, or dying (if not eaten) on the forest floor, mingling with rotten leaves to become humus for the tree which produces flowers and fruits for the birds and the animals of the next generation.

So when their tree is cut down the inhabitants are dispossessed. They cannot simply scramble off or fly into the next tree—that condominium too is fully occupied! An invasion of privacy! A trespasser coming in to feed on its fruits is quickly driven away. By smell or looks or sound, the inhabitants know who are the real members of their clan.

Before each animal is able to find a permanent home it will be a distressing time for all.

We are talking only of one tree, not even of a whole logged over area.—GCF, culled from the wisdom of Dr. Diocoro Rabor.

MARCOS MOVES TO SAVE MARINE SPECIES

Manila PHILIPPINES DAILY EXPRESS in English 20 Mar 83 p 1

[Text]

**PRESIDENT MARCOS** directed yesterday all government agencies to institute immediate measures to protect marine life from indiscriminate destruction.

In a conference with Prime Minister Cesar E.A. Virata in Malacanang, the President expressed concern over the vanishing species of marine life in the country's 40,000-hectare natural preserves.

A case in point, the President said, is the destruction of corals in Cebu where they were being sawed off and used as building blocks.

The President said that all proclamations and decrees aimed at protecting marine life should be collated and implemented to prevent further destruction of precious marine resources.

"Collate all these and use the powers of the Presidency, if necessary, for the immediate protection of marine life," he told Virata.

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**THE PRESIDENT** also said that the gathering of seashells, like the

giant clams should be stopped immediately.

Recently, the President said, giant clams four times bigger than the usual clams were found in Sibuguey which may turn out to be a natural pearl farm.

The President said that he immediately gave instructions not to touch them but when he sent divers to the area they found some of the corals destroyed by dynamite fishing.

He also mentioned that the destruction of coral reefs are caused by dynamite fishing which is still a rampant practice in many parts of the country.

The President also said that measures should be immediately enforced to protect the vanishing species of sea turtles, particularly in the Southern islands.

"These are the things we should do immediately, instead of talking in very profound details or prolonged studies. We should protect what we have now and do it quickly," the President said.

CSO: 5000/4323

PHILIPPINES

COLUMNIST RAPS WATERSHED MANAGEMENT

Manila BULLETIN TODAY in English 25 Mar 83 p 6

[Article by Jesus Bigornia]

[Excerpt] Officials of the National Power corporation have expressed surprise and consternation over the dropping water level at the Angat dam. Such hypocrisy in government officials is as contemptible as it is unconscionable. A cursory look at the Angat watershed would have shown even a disinterested on-looker that the hills around the dam are already as bald as the head of Telly Savalas. That NPC officials have not stopped the depredations of log poachers from denuding the watershed is due chiefly to their negligence or inefficiency.

It is axiomatic that the root systems of trees and the humus of their decayed leaves and branches retain moisture and hold back soil erosion. Officials of the NPC know this. Their duty was clear--stop the cutting of trees within the Angat watershed reservation. They could not have been ignorant of rampant poaching of logs in the area. Logs must be hauled by huge vehicles. Their activity could not be hidden from the eyes of NPC guards and those of citizens. Yet, logs in bulk have been cut and hauled away to sawmills near Manila, principally those at Meycauayan. The forest cover at the watershed is gone. Now, the NPC administration cries over spilt milk.

CSO: 5000/4323

THAILAND

CONCERN GROWS OVER USE OF TOXIC CHEMICALS

Bangkok LAK THAI in Thai 3 Feb 83 pp 16-22

[Article: "Black Death"]

[Text] Last year, people became disgusted and reduced the amount of fresh vegetables consumed during a period in which there were reports about vegetables being soaked in embalming fluid -- formalin. Even though the matter died down when it was proven that this was not a poison, there is still uncertainty about this and people living in this society today must confront other types of toxic chemicals. The latest case involves the matter of poisoned fish, which has been attributed to the herbicide paraquat. This has created alarm about the toxic substances that are presently being used widespread in agriculture. But it seems that little attention is being given to this even though this poison can be compared to the "black death" and is accumulating more and more in all elements of society and is ready to kill gradually.

The Appearance of Toxic Substances

Because of the spread of plant pests, including both diseases and insects, in agricultural countries such as Thailand, attempts have been made to find ways to control and eradicate the plant pests. Toxic substances used for this were first introduced after the end of the Second World War. In the beginning, they posed no problem since little was used and most of the chemicals dissolved rapidly. But later on, as the amounts used increased and as the time necessary for the chemicals to dissolve increased, the toxicity increased too.

A report by Dr Prayun Dima, the director of the Toxic Substances Research Division, Ministry of Agriculture and Cooperatives, states that of the 6,000 types of toxic substances found in the world, which have been used to make 90,000 different formulas, Thailand uses at least 100 types in 1,000 formulas. These can be divided into groups based on whether they break up rapidly, fairly quickly, slowly or not at all. The types that are used a lot include chemicals in the chlorinated hydrocarbon group such as DDT, dieldrin, asdrin and endrin. These are all in the group of chemicals that break up slowly. After they are used, it takes 2-4 years for them to dissolve completely.

Besides this, there are the organophosphorus compounds such as parathion, which the villagers know as "the skull and crossbones," malathion and dioxinon, which are used to kill plant pests. These are in the nonpersistent group; they break up in only 1-12 weeks. But they are still very dangerous to living things.

#### The Power of the Poisons

These toxic substances may pose a direct danger to people who have to use these substances; this includes farmers who use such chemicals in the fields and workers in production plants. It is easy for the toxic substances to get into their bodies. They may become ill immediately if they ingest too much. There are many examples of farmers using chemicals incorrectly or of not being careful when using them and then developing various abnormal symptoms such as headaches, stomachaches and vomiting. Some people have convulsions and, if they do not receive treatment, they may die.

While some people commit suicide by ingesting such large quantities of insecticides that their stomachs cannot be pumped out in time, besides such direct poisoning, the frightening thing is that the residual poisons that remain for a certain length of time depending on the type and quantity give rise to chronic problems, and the symptoms manifest themselves in the long term. People who ingest these toxic substances might not even be aware of it. In particular, DDT, which is used widespready, can cause liver cancer. This has been shown in tests conducted with animals. Medical data show that DDT is a cause of leukemia. And it can cause anemia.

"One time, a 36-year-old engineer went to see a doctor because of having high blood pressure. When he went to the hospital, the doctor there treated him for this, and when he improved, he returned home. But 6 months later, he returned with the same disease. At the same time, his kidneys had begun to fail. He was treated and sent home again. But the last time he did not return [home]. He died because of kidney failure. And his blood pressure could not be controlled," said Dr Somchit Wiriyanon, the head of the clinical pharmacology and toxic substances unit at the Ramathibodi Hospital, who is a person who has studied this matter for a long time. He cited this as an example of a death actually caused by toxic substances.

"It was only later on that we learned that this engineer worked in the hold of a ship where carbon tetrachloride was used as a cleaning solvent. He supervised things there and so he was constantly breathing this substance. This destroyed his liver and kidneys," said Dr Somchit. He also mentioned something that is frightening and that is that besides the poisons that act instantly, if sufficient quantities of long-acting poisons are ingested, they will become a serious problem and it will not be possible to tell when problems will begin to manifest themselves. "An example is factories that produce batteries. These factories use manganese, which takes 10-20

years to manifest toxic symptoms. And after such a lengthy period of time, no one would know what caused the illness."

The U.N. World Health Organization (WHO) once estimated that, each year, approximatley 500,000 people in the underdeveloped countries, which includes Thailand, become sick and die from toxic substances, particularly people who work in the agricultural sector.

#### Since Looking Around At the World

The possibility of such substances becoming residual poisons is a very important problem for both the condition of the environment and the safety of all living creatures. These substances can pollute the atmosphere, water and land. At present, the aerial spraying of pesticides is very popular. Toxic substances may get into places where we do not want them. Studies have shown that up to 75 percent of the pesticides stay in the atmosphere or fall in unintended places; only 25 percent fall in the intended areas.

As for in water, there are many ways for toxic substances to get into the water sources, from rain to rivers. These substances are washed [into water sources] from agricultural fields where chemicals are used, and toxic substances are emptied directly into water sources. Studies have even shown that various toxic substances have gotten into the water wells. Even the water supply, which has to rely on the agricultural water sources, is easily susceptible to contamination. What is important is that some of these toxic substances cannot be destroyed like bacteria. As for soil, toxic substances have already gotten into the soil directly. Besides the destruction of the fertility of the soil, the problem is that these substances evaporate and accumulate in the atmosphere. Thus, people and aminals can come in contact with them constantly.

Pollution, which can be seen easily as mentioned above, is not the only problem. Toxic substances have gotten into almost all types of foods used in daily life, particularly agricultural products. This includes rice, which is the staple food of the Thai people, vegetables, fruits, milk, eggs, vegetable oils, lard and meat. This occurs along the food chain. Studies conducted by the Toxic Substances Research Division, Ministry of Agriculture and Cooperatives, have found toxic substances in more than half the food samples, almost all of which are essential food items. In some of the samples, the level of poison in the sample exceeded the safety level stipulated by the World Health Organization. And in some cases, toxic substances are accumulating at a very alarming rate.

Who would have thought that the fresh milk given to young children, who drink at least a glass a day, contains dangerously high levels of dieldrin and heptachlor. [It has been found that] 45 percent of the milk sold at the markets contains these toxic substances. And what is even more frightening is that the breastmilk of almost all nursing mothers

contains DDT at levels as high as 3.12 parts per million (ppm) on the average. Besides this, DDT is also present in the various organs of the body, in the adipose tissue, kidneys, liver and brain. The same report said that the amounts found in Thais are much greater than those found in people in other countries.

"Every year, we have to spend 50 billion baht to purchase medicines to treat the illnesses of the people. And this does not include outpatients. You can see for yourself how bad the health of the Thai people is. Because when they were babies, they were raised on breastmilk that contained toxic substances and all their lives they have encountered toxic substances in their homes, water and food. Even when people drink tap water, they ingest toxic substances," said Dr Prayun, who has studied this matter for 20 years.

"What is most important is that tests were once done by checking the blood in the placenta after mothers gave birth. Can you believe it! DDT was found in approximately 50 percent of the normal people. This shows that newborn infants, or babies still in the womb, already have DDT in their bodies," said Dr Somchit about this very frightening poison.

#### Thai-Type Control

As for controlling the amounts of toxic substances, most of which are imported from abroad, there have been laws in effect ever since 1967, with these laws revised many times. There is a Toxic Substances Control Committee, which is a national-level committee, to review each substance that is imported and there are officials to monitor things. But even so there have constantly been criticisms that the existing measures are too lax. The use of some of these toxic substances have been banned in the developed countries, but Thailand is still importing large quantities of these chemicals. The figures on the import of toxic substances, more and more of which have been imported every year, confirm this point.

A matter that is talked about very frequently is the matter of DDT. There are many research studies that show the danger from toxic residue. But the control group has not admitted this, claiming that there is not yet enough clear evidence and that toxic substances must be chosen based on conditions in each locality and not on what is happening in other countries. "Each person has a different viewpoint. The Department of Agricultural Extension wants to control insects. Actually, concerning what they have accomplished, it is not necessary to wait for something to happen first," said an expert on toxic substances to LAK THAI.

He also said that the "government wants to increase yields. But it doesn't realize that importing large quantities of chemicals is a great mistake. One day, we will wake up to find that no country will purchase goods from Thailand because the goods are contaminated with insecticides. That will be an even more serious problem."

However, a notice has now been issued prohibiting the import of six types of toxic substances, including BSC, Foswell, endrin and sodium asentie. This was done after there was clear evidence and data that the use of these substances is very dangerous and that other, less dangerous substances can be used instead. But it has been proposed that many other toxic substances be banned too or that imports be limited. Concerning the struggle over this matter, besides relying on scientific evidence to make various claims, this also involves the millions in profits made by the companies that produce and import these substances.

#### Backwardness Is the Problem

There are many other problems that pose obstacles in controlling toxic substances. In particular, equipment is out of date, there is a lack of capital and, importantly, there is a lack of interest in this problem. Dr Somchit, a toxicologist, wearily admitted that this matter has been under consideration for more than 10 years. But the people responsible have not shown much interest. And only in recent years have people in the medical field taken an interest in this since the number of people who have become sick from toxic substances has increased.

"Several years ago, there was a man from the northeast with a lung disease. X-rays showed symptoms similar to those of pneumonia. But after being treated at the provincial hospital for several months, he was no better. He was sent to the Ramathibodi Hospital for treatment, but 10 months later he died. We did not know why he had died. We had a hunch that insecticides might have been the cause. But we had no evidence that he had been in contact with such substances. Later on, we received another patient from the northeast. His symptoms were exactly the same. But he died shortly after arriving at the hospital. From the beginning we suspected that he had [come in contact with insecticides] and so we checked for the presence of insecticides. The urinalysis turned out positive," said Dr Somchit giving an example.

"Many years ago, I attended a conference in England and went to observe toxicology activities in Germany. They had modern examination equipment. When someone ate a toadstool and fell sick, they took a blood sample and put it in a centrifuge for 1 hour. They then knew what the cause was," said Dr Somchit concerning the efficiency of our equipment as compared with that of other countries. "They asked how I did things. I told them how we analyzed things. When they asked how long it took, I said 2 days. They said 'oh ... and the patient didn't die?' But I lied. Actually, it took us 2 weeks to learn the results." This is a very bitter joke.

Another thing that seems as if it will pose a problem in controlling the toxic substances in pesticides is the farmer's lack of knowledge and understanding concerning the correct way to use pesticides and prevent anything dangerous from happening. The agricultural officials cannot

watch things closely or go give advice to people everywhere. Thus farmers, who are unaware of things, have frequently been hurt by using pesticides in a careless and improper way. Furthermore, the loopholes in the laws make it impossible to control the advertisements, which exaggerate the ability of the pesticides to eradicate plant pests.

"There is a problem of checking the toxic substances in the chemicals since the equipment that we have provides little help. Usually, we have to rely on the data provided by the companies that produce the chemicals. Also, the farmers do not know how to use the chemicals or protect themselves. Also, there are many loopholes in the laws. These are the things that I would like to see changed," said another toxicologist in a discouraged voice about the problems.

#### Conclusions Waiting For a Response

This is not the first time that the danger from toxic substances has been mentioned and it will not be the last. Its just like the hundreds of other problems that have piled up in this country. They are like waves endlessly crashing against the beach which people must get used to. In those rare instances when someone brings up an important problem to warn society, the matter gradually dies down and the problem remains with nothing changed.

Thus, there is still no answer to the question of how to get rid of this "black death" or at least reduce the damage to humans, animals and the environment.

#### Paraquat, the Terrible One

After many days of being viewed as the probable cause of the death of large numbers of fresh-water fish in the rivers in several provinces in the central and southern regions, things looked somewhat "brighter" [for paraquat] when the special research team from Chulalongkorn University made known the results of the tests that had been conducted. It said that the strong poison in paraquat had not posed a danger to the fish even though concentrations 30 and 300 times higher than that found in the water where the fish had died had been used in the tests. "As for residual poison, this is a possibility. But the possibility is very small because documents on paraquat show that this substance does not accumulate in the tissue," announced the Chulalongkorn University research team last Monday.

Concerning paraquat, a toxic substance that is used as a herbicide and that has been found in the water sources where fish have died in concentrations reaching 0.08 ppm (parts per million), the first assumption of the experts who went to study this was that paraquat was the cause of the epidemic among fish. Dr Prayun Dima, the director of the Toxic Substances Research Division of the Ministry of Agriculture and Cooperatives, was one of those who told LAK THAI with confidence -- before the results

of the Chulalongkorn study were made public -- that every water sample examined contained paraquat and that dieldrin and DDT were also present.

"And there is something else that we are very sure about. The Department of Fisheries and the National Fresh-Water Fisheries Institute have conducted tests and found that paraquat causes sores on fish. In tests conducted in water where the concentration [of paraquat] was 10 times higher, sores began to appear on the bodies of the fish within 72 hours. Technical documents state that dieldrin and DDT cause the mouth muscles to harden and develop sores," said Dr Prayun confidently. "Simply claiming that this has happened because the ponds are not clean puts too much blame on those who raise fish. Concerning this, in ponds that use water that comes from the mountains and that has not flowed through the fields, the fish are not sick. But the ponds where the fish are sick use river water that has flowed past agricultural fields."

Thus, a dispute has broken out between the two groups of scholars, with each group having evidence to support its position. Dr Prayun firmly maintains that this toxic substance has definitely played a part in making the fish sick. Even though the tests show that this toxic substance does not have an immediate effect, an accumulation of the poison might weaken the fish and make them susceptible to bacteria. But there is no proof of this. However, paraquat, which has always been acknowledged as being the "terrible one," is still well worth discussing since, at present, it is a pesticide that is playing a large role among farmers.

Paraquat has been used mainly as a herbicide on rubber plantations. Besides this, it has been used in fruit orchards, where special nozzles have been used to spray it directly onto the weeds. This toxic substance acts as a poison on the white tissue, or chlorophyll, and kills the vegetation within 2 days. But this toxic substance dissolves quickly and so it must be sprayed twice in order to kill the underground roots.

"By nature, it is water soluble and will break up into positively charged paraquat ions. When these come in contact with negative ions in the soil, they form a tight bond and stay there. Thus, some scientists doubt that this substance can 'roam about' very much. Based on its qualities, this is probably not possible," said Dr Ruk Sayamanon, the deputy director-general of the Department of Agriculture and a member of the Toxic Substances Control Committee, about the qualities of this "terrible one."

"At present, in foreign countries, paraquat is registered as a herbicide for eradicating water plants such as water lettuce, duckweed and water hyacinth. The concentrations necessary to kill these plants is approximately 0.5-1 ppm; but this time we have found concentrations of only 0.1 and 0.8. If this could kill fish, they would not allow it to be registered," added the deputy director-general, who is one of those who do not believe that paraquat is the cause of the fish dying.

Here is what some doctors have to say about the adverse effects of this substance on the human body. Dr Somchit Wiriyanon, a toxicologist, said that if paraquat is ingested orally, it will burn the organs that it comes in contact with and the [person will cough up] blood. The stomach will also be burned. Besides this, if it comes in contact with the lining of the lungs, the lungs will swell, liquid will pass through and air will escape. This will happen within 48 hours if large quantities are ingested. If smaller quantities are ingested, the lung tissue will harden and gradually weaken, and the body will lack sufficient oxygen. As for the liver, the cells will be destroyed. And the kidneys will suffer damage too.

"Based on what we have learned from conducting autopsies on people who have ingested toxic substances to commit suicide, the lungs, liver and kidneys are filled with blood. No one knows how many parts per million will cause this to happen," said Dr Somchit as an example. He said that the paraquat problem arose fairly recently and so very few studies have been done on this. At present, it is not possible to measure amounts exactly. "But if it is ingested, there will definitely be major problems. As for the environment, we do not know what the effects are. The results obtained in the tests conducted by Chulalongkorn University must be accepted since no other tests like this have ever been conducted."

It is this great potency that has led to larger and larger quantities being imported ever since 1978. More and more has been imported to satisfy the demands of the rubber plantation farmers, who like to use large quantities. Statistics show that the amount of paraquat imported increased from 980,000 kilograms in 1978 to 2.2, 2.6 and 4 million kilograms in the years 1979, 1980 and 1981 respectively, with the amount of paraquat imported topping that of any other pesticide. "Seeing the levels shoot up like this, we have followed matters constantly. And the Fresh-Water Fisheries Institute has found traces in all the water samples tested," said Dr Prayun concerning why he is so interested in this "terrible one."

The director of the Toxic Substances Research Division also said that the data provided by the production companies -- data that say that this chemical is efficient and does not pose a danger to humans and that were accepted initially -- has been discredited by evidence presented at the World Health Organization conference held in The Hague during the middle of last year. A Canadian document, citing new data, said that this will pose a greater danger in the future unless it is controlled. The World Health Organization agreed to include this chemical among those chemicals whose use must be strictly limited.

"There is no antidote for paraquat; anyone who ingests some by mistake will die, unlike parathion. But here, we put it in all types of containers, even in tonic bottles. Only a few doctors at a few hospitals know what

treatment to provide," said Dr Prayun in an alarming manner. "The companies are lying when they say that this chemical does not pose a danger once it is in the ground or water. It poses a great danger to aquatic animals."

Nevertheless, when those who are directly responsible for the control of toxic substances were asked about this, they cited the figures on the amount of paraquat imported in 1982, saying that the amount imported had declined to only 2.1 million kilograms. They said that this happened because the price of rubber that was agreed on caused the importers to have to reduce imports. But as for controlling this substance, the officials concerned will go give the farmers concise guidance on how to use this chemical. "Both the Rubber Plantation Organization and the Rubber Research Center of the department will send officials to provide guidance and constantly check to see if the farmers are using this chemical correctly," said the deputy director-general of the Department of Agriculture.

"When permission was requested to build a production plant, the matter was raised by the Ministry of Industry. The committee formed a work committee to discuss this. Everyone [on this committee] felt that there would be about 10 paraquat poisonings a year, with most being suicides," he added. And he said that the farmers who use paraquat will have problems if they handle this substance with their bare hands or spray it without using shoes. This can cause the skin to crack, but the symptoms will clear up once they stop using the chemical. For this reason, the control committee gave its permission.

In summary, paraquat, this "terrible one," has both detractors and supporters, and there is no clear evidence on how dangerous it really is. At this stage, there is disagreement. Those who oppose its use, such as Dr Prayun, have faced constant pressure from the problem of poisoned fish. He is so tired of this that he would like to resign since he has had to struggle against bad elements for 20 years without achieving any results.

#### An Announcement From the Department of Agriculture

At a time when there is much confusion concerning the cause of the epidemic among fish, LAK THAI requested an interview with the director-general of the Department of Agriculture, Mr Yuk Sarikaphut, on the matter of controlling toxic substances, which is within the power of this department. When [LAK THAI] went to see him at the appointed time last Tuesday afternoon, Director-General Yuk invited other high-ranking officials, including the deputy director-general and the directors of the divisions concerned, to take part in the interview. Before beginning the interview, Director-General Yuk, who said that he had taken this position only 3 months ago, warned that he did not yet have detailed knowledge of the activities of all of the divisions and that it was thus necessary to ask those concerned to come provide data. Concerning

the matter that has been in the news, he said that he has forbidden Dr Prayun Dima, the director of the Toxic Substances Research Division, from giving information to the mass media. He said that this request was made in order to prevent the disclosure of information that is not in accord with [the findings of] the special committee set up by the government to solve the problem of poisoned fish. [He said that] it would be better if everyone waited until this committee discloses all its information on Tuesday (18 January). "In my opinion, toxic substances may be involved. But this must be made clear. Otherwise, this will have an even greater effect on the farmers. Things are already bad enough since fish just aren't selling, regardless of whether they are all right or not." The people who took part in this interview included Dr Ruk Sayamanon, the deputy director-general, Udon Wonwisitthamrong, the director of the Agricultural Control Division, and an official from the division. The following is an excerpt from the interview.

LAK THAI: Would you tell us what stage has been reached and what is being done in controlling toxic substances?

RUK: Concerning this, we already have a law known as the 1967 Toxic Substances Act. It states that those who wish to bring in or order, import or export, or take toxic substances through the country and who wish to produce such substances for trade, to have such substances in their possession for sale or to use them on hire must first obtain permission from officials. There is the Toxic Substances Control Committee, which is chaired by the undersecretary of the Ministry of Agriculture and Cooperatives. It is composed of representatives from the ministries of agriculture and cooperatives, public health and industry, with three representatives from each ministry. Besides this, the ministries of defense, interior and commerce and the Customs [Department] each have one representative on the committee. The task of this committee is to consider matters in order to decide which substances to recommend that the ministers declare toxic substances. A list of such substances has been announced, and people who want to use these substances must first obtain permission. Besides this, this committee discusses which chemicals will be under the control of which ministry since some of the substances can be used in various sectors, such as agriculture, public health and industry.

This act was amended in 1973, and articles concerning registration were added. Besides having to have a license to import or produce these substances domestically, [the people involved] must register each of the substances individually with an appointed subcommittee, with the full committee discussing the matter first. Besides this, measures have been stipulated to include fake toxic substances and substandard substances, and penalties have been increased. Recently, regulations on storing, transporting, using and producing such substances were announced. Based on this law, there are even measures concerning the disposal of toxic waste materials and production activities at the plants. But based on this act, there is something that is somewhat

strange. Even if we know that a substance is highly toxic, if it is not included on the list, then it is not considered to be a toxic substance. For some chemicals, we consider other aspects besides their toxicity. We also consider whether it is being imported into the country.

LAK THAI: What criteria are used in making decisions?

Ruk: As for the criteria that have been discussed, suppose, for example, that it has definitely been proven that a toxic substance causes cancer, we would ban this substance. But there have been times when the matter of substances causing cancer has been discussed by the Toxic Substances Committee. People have claimed that this type of substance causes cancer in rats. But some very experienced committee members have argued against this, saying that they cannot claim that this will affect humans just because it causes cancer in rats. And so the matter has died down. Some scholars may be somewhat unhappy since they believe that if it can cause cancer in rats it can cause cancer in humans too. This is a matter of opinion. You cannot say that one side is wrong since it cannot be proven whether this will cause cancer in humans or not. The matter is still in doubt.

LAK THAI: It is said that the government relies only on the data provided by the companies that produce these chemicals.

Ruk: You probably do not understand all the data. Concerning the documents of the companies, officials look to see if they have conducted the tests properly in accord with scientific principles. If everything has been done properly, this is considered to be one piece of evidence. At the same time, they have to study the documents prepared by scholars from neutral organizations. That is, in documents, you can write whatever you want. But readers must have sufficient scientific knowledge to determine whether the proposals are correct and whether this can be used as evidence. For example, if someone simply claims that a certain chemical dissolves completely just 1 day after being sprayed on vegetation, officials will not believe this and will want to see the data. They also have to go observe things at other institutions. We also have to check the documents from international organizations. In certain cases when they are not satisfied, the officials may ask for additional evidence or they may even ask that additional tests be conducted.

LAK THAI: Are the effects on the environment, particularly the long-term effects, considered?

Ruk: I would rather put it this way.... For example, it has been said that tropical countries should ban the use of DDT since other countries, such as Sweden, have already banned this chemical. The United States has banned it and so Thailand should ban it. But when the matter reached the Toxic Substances Committee, another group said that when African countries learned that Europe and the United States had banned DDT, they immediately followed suit. But after they banned it, in just a

single year, the number of cases of malaria, which had almost been wiped out, shot up. Thus, it appears that Africans have come down with malaria because the other insecticides, while of good quality, did not produce the same good results as did DDT given the backward conditions in Africa. Also prices were much higher and there were problems in using these other chemicals.

For example, you live in Bangkok and have a mosquito screen. You spray an insecticide like phailither and close up the room. You stay outside for an hour. The mosquitos all die. Then, before entering the room, you turn on the fan for almost half an hour in order to clear the air. You are safe. But stop and think about the rural people who live in small huts. They close them up and go outside. But after spraying, they have to open the huts and go inside again. But the insecticide is all gone and so mosquitos come in again. But if DDT is used, once it is sprayed, its effects will last for 6 months. This is something to think about. Those who said this were all senior people. So you have to weigh the matter. Do you want to die from malaria or suffer the consequences [of using DDT], which may be much less serious than those of malaria. At present, these are the reasons. The only thing is that these reasons have not been disseminated outside the conference hall.

Udon: Recently, there was a notice that said that countries in South America had stopped using DDT to eradicate mosquitos. But since there has been a great increase in the number of malaria cases, these countries are now using DDT again. This was reported by the World Health Organization.

LAK THAI: What about the matter of giving suggestions to and informing the farmers about the use of toxic substances?

Yuk: As for providing training seminars directly, the department has held training seminars for officials of the Department of Agricultural Extension in the use of other pesticides. These officials have then formed volunteer groups to eradicate crop pests. Village farmers have been selected for training. They have been taught how to use the chemicals and then let them show the farmers how to use the chemicals, how to protect themselves and how to use the chemicals safely. Looking into the future, I think that this will have to be emphasized even more. In particular, special emphasis will have to be placed on those chemicals that we feel will cause problems.

LAK THAI: Will the measures for controlling these types of chemicals be revised in the wake of the epidemic among fish?

Ruk: Next week, the Toxic Substances Control Committee will hold a meeting on Friday, the 28th. I am sure that this matter will come up.

Yuk: This is an important matter. We will consider all of the data compiled by various groups and any other new data that there might

be. We may contact [people] abroad to discuss this matter with them again. And I want to say that if a problem really does arise, it is within the power of the minister of agriculture and cooperatives to decide whether to repeal or continue using [these measures]. There will probably be discussion on what should be done. Besides this, the Department of Agriculture, the Department of Agricultural Extension and the government units concerned will have to hold some meetings and find other measures, not just paraquat. We may have to use a campaign system in order to make a direct effort on this front.

Number of people who became ill from toxic substances during the period 1978-1980

Year	Poisonings	Deaths	Suicide attempts	Deaths
1978	136	--	48	6
1979	334	1	429	15
1980	1,025	4	392	5

Source: Toxic Substances Section, Agricultural Control Division, Ministry of Agriculture and Cooperatives.

Note: Data obtained from 13 hospitals in the central and northeastern regions.

Rankings for toxic substances imported into Thailand during the period 1978-1980.

Rank	1978	Amount	Cost
1	2.4-Camin	2,647.2	35.50
2	DDT	2,076.1	44.33
3	Toxafin	1,133.4	24.98
4	Paraquat	983.3	91.66
5	Methoparathion	941.0	38.77
6	Toxafin + DDT	927.2	22.13
7	Petroleum oils	909.2	5.26
8	Sulfur	693.2	7.49
9	Sineb	641.0	11.85
10	Copper oxichloride	608.8	14.85

Rank	1979	Amount	Cost
1	Paraquat or grammaron	2,255.6	97.12
2	Methoparaquat	1,867.4	77.59
3	2.4-D Sodium salt	1,519.4	24.60
4	DDT	1,154.6	31.67
5	Sulfur or camulat	893.6	10.81
6	2.2-D or Dao Pon	848.8	24.17
7	Copper oxichloride	691.0	20.65
8	Monokraithofo surnuwakhron	689.9	81.22
9	Dimethoet	571.2	26.79
10	Petroleum oils	513.8	6.11

Rank	1980	Amount	Cost
1	Paraquat, krammisen	2,608.8	111.66
2	Methoparathion	1,437.9	57.74
3	DDT	1,277.0	26.68
4	Maetchet 56	937.0	10.32
5	Coboxdrin,copper oxichloride	874.5	28.27
6	Toxafin	832.9	18.60
7	BSC	820.3	38.46
8	Dimethoet	677.7	35.82
9	Asodrin	675.3	81.11
10	Ecasal, lime sulfur	665.6	9.34

Source: Toxic Substances Research Division, Ministry of Agriculture and Cooperatives.

Note: For quantity, the unit is the ton; for cost, the unit is millions of baht.

11943  
CSO: 5000/4314

FOREST DAMAGE IN NORTH BOHEMIA DISCUSSED

Prague RUDE PRAVO 12 Mar 83 'HALO SOBOTA' supplement No 10 p 7

Article by Zdenek Zuntych: "The Statute Alone Will not Solve Anything"

Text It was Friday afternoon, I was standing on the edge of the road waiting for the bus and, in order to relieve boredom, I was counting cars passing by. I could endure it for a few minutes, but I stopped counting when I reached 120. I thought it would be better to do so because the number continued to increase. The road namely leads to Krkonose the Giant Mountains and what I was witnessing brought back to my mind a fairy tale about the pot in which porridge kept boiling until it overflowed and spilled all over, rushed like this river of cars and there was no end to it. The bus arrived, I boarded it and set out on a trip in the same direction--to Krkonose, the only national park in the Czech Socialist Republic. Later on I disembarked and at once became part of that army of 9 million visitors to these mountains who come here year after year in recent times.

Nine million people represent an onslaught on nature in Krkonose which thus in view of its small area is among the most visited territories in Europe. It is not only among the most visited, but also among the oldest, most beautiful and, let us add, among the most uncommon areas in many respects. Here we find not only extensive fir forests which above the timber line change to areas covered with dwarf pines, but also high-altitude meadows with rare flowers or plateaus with peat deposits of the subarctic type and representatives of many uncommon types of wildlife. It was precisely in order to protect these irreplaceable natural and cultural values that the Krkonose National Park was established on 40,000 hectares of this territory in 1963.

It comprises the most valuable areas at higher altitudes in Krkonose from the Novy Svet saddle in the west to the Zacler saddle in the east. Forests cover 80 percent of the area here and apart from smaller mountain torrents the Mumlava, Jizerka, Labe Elbe, Bile Labe, Upa and Upice rivers have their source here. And all this, a large number of visitors and unique nature wonders, also gives rise to a number of problems--how to feed such a multitude, where to provide overnight lodging for them, how to dispose of waste and garbage and where to dump it, how to make it possible for visitors to see as much as possible, but also to minimize the inauspicious effect of 18 million feet treading the ground, which often is worse than that of sheep's hooves.

There are many more problems with which the administration of the Krkonose National Park has to deal. To all these problems, one, and probably the most important, problem has been added recently by civilization alone--air pollution and the withering away of forests.

For this reason we met with the workers of the administration of the Krkonose National Park at the Krkonose Museum in Vrchlabi. And like Ariadne's thread, the endless topic of these discussions was their worry about the protection of the good health of nature in the national park. What follows is the summary of our conversations about the present conditions of Krkonose.

#### Research

It may sound like a paradox, but the fact is that despite the continuing deterioration of the condition of Krkonose nature in recent years, the research institutes and research workers themselves have not been as much interested in Krkonose as they should be. Therefore, we know very little about the water-supply-regulating function of Krkonose and to what extent this territory is threatened by soil erosion and industrial fallout. Perhaps also due to these reasons, until 1978 only a few people believed that something was happening to the Krkonose forests. Then spring 1981 came and also the first serious warning in the form of drying up trees, notice of which also had to be taken by the Water Utilization Research Institute that has been paying increased attention to this only national park in the CSR since then. It is a pity that air pollution is not being properly monitored even after a lapse of 2 years. However, the appropriate centers of the Czechoslovak Academy of Sciences should also express their opinions on the situation there.

Thus it should not happen that botanists, for example, would be interested in Krkonose nature only within their own narrow field of study. This area should be included in state and ministerial research projects which have successfully avoided it so far. As in many other areas of our life, the following rule also applies to Krkonose: If we know the situation, we can adopt appropriate measures, react correctly and make an effort to rectify it. Avoiding mistakes and errors, however, presupposes knowing the situation really comprehensively and consistently, to have information based on research and regular followup. All this should also provide an answer to one of the basic questions which we will face during the next months and years: what to plant and how to reforest the areas which are without trees now?

#### Forests

The forests which cover more than 80 percent of the Krkonose surface and, among other things, effectively regulate draining of this mountain range and perform an important function in the protection of soil has been an increasingly frequent topic of discussions and articles. They are discussed at press conferences, in professional circles, among tourists and also in the daily press. One of the latest instances in the article: "Forest Management in Krkonose and Pollution" which ZPRAVODAJ VYCHODOCESKYCH STATNICH LESU [Bulletin of East Bohemian State Forests] published in its No 12 last year. Its author, Eng Jan Duha, stated among other things that a rapid deterioration

of the health condition of trees occurred in April and May 1981, when, after unseasonably warm weather, the temperature suddenly dropped and evergreens started to dry up--those evergreens which had been rescued from tortricid just 1 year earlier. Later research has revealed that more than 50 percent of the evergreens in Krkonose have been damaged by toxic fallout. Past experiences also show that it will not be possible to plant certain types of spruce in any location with a high concentration of sulfur dioxide. The selection of substitute trees must, therefore, be based on the new natural conditions of the highest Czech mountains and the final choice will have to be limited, for example, to dwarf mountain pine, birch, mountain ash, willow trees or exotic evergreens.

#### Visitors

Some of them arrive to engage in sport, others just to do some hiking or for recreation. All of them, however, both in summer and winter are set to learn more about nature in Krkonose and individual remarkable spots of the national park. Unfortunately, many of them do what suits only them, not nature. Many of them pass every year over the roads and footpaths which were opened at the turn of the 19th and 20th century, when there were no indications whatsoever that one day they would be exposed to such an onslaught as at the present time. And so because the trails are crowded or because they are damaged and therefore also less passable, new paths arise nearby. It is, therefore, no exception that a "road" 6-7 meters wide exists in some spots, as for example, in the neighborhood of the Labska and Lucni lodges. And yet, from the natural scientific standpoint unique and irreplaceable types of fauna and flora exist in these high altitude areas of the Krkonose National Park.

The destruction of roads is also partly caused by the indiscriminate methods of food supply flow to mountain lodges and by the use of sleds over roads barely covered with snow in spring, when the high piles of melting snow along the roads form a huge drain. Much more serious problems, however, are caused by liquid and solid waste produced by the inhabitants of recreational establishments. Managements of some of these enterprises simplify this problem for themselves by draining the waste water into the creeks and storing solid waste right behind the lodge. It is a pity that endless discussions drag on and on about establishing a central dumpsite near Mlade Bucky, while nothing has been done about it yet. There also have been a lot of discussions recently about potential closing of certain areas. The following question inevitably arises: Is it a solution? It may be a partial solution, but since the plant communities are undergoing generic changes in some locations, the living space for endangered types of animals is becoming increasingly restricted. Let us recall in this context that even the fall of the king of spruces in the Boubin forest was caused by people who, by treading on the surrounding ground, gradually removed the soil covering its roots.

I have already mentioned the large number of visitors, but let me add that the number of tourists hiking over the mountain ridge areas of Krkonose increased 200 percent since 1970. For this reason the park administration was compelled to restrict entry into the most endangered and most damaged areas.

The blue-marked trail in the Prameny Upy State Nature Reservation was temporarily closed from the small chapel in the Giant Valley to the Giant Lodge effective 1 July 1982, the so-called Krakonos Road in the Prameny Labe State Nature Reservation from Horni Misecky via Kotelni Jamy to Dvoracky, and another road in the Labsky dul from the Pudlavsky Waterfall to the Labska Lodge effective 1 August 1982.

We also discussed other matters with Eng Juri Svoboda, KRNAP ~~Krkonose National Park~~ administration director, Eng Vladimir Satny, head of the department of KRNAP administration for nature protection, RNDr Jan Stursa, head of the natural sciences department in the Krkonose Museum and other workers of the park administration. We did so because the Krkonose National Park is not a subject which can be covered in 1 hour or even 1 day. Nevertheless we tried to demonstrate in a nutshell the problems which trouble Krkonose today. Certainly, we could also write in a different vein--about the guided trail trips, information centers and new modern water-treatment plants, water-supply pipes and sewers which already exist or are being constructed in Harrachov, Spindleruv Mlyn, Pec pod Snezkou, Jilemnice, Janske Lazne or Vrchlabi. We are of the opinion, however, that the conservation of the irreplaceable natural values of the Krkonose National Park is the foremost task today, one without which the guided trail trips and enterprise-owned lodges will be superfluous. It is still true that destroyed cars can be replaced by new ones, but we will never be able, despite all our knowledge, to reintroduce animals and plants once they became extinct. It should, therefore, be a rule that permits will be issued only for the most important investments and projects in Krkonose, that the harmful effect of motor vehicles must be restricted, that the destruction of the area and soil erosion must be prevented and that bare areas must be reforested because all this will be of tremendous importance for the future. Only in this way will it be possible to prevent Krkonose from becoming only bare mountain ridges like those long the Adriatic coast which the Venetians deforested a long time ago. Grazing removed the last traces of grass and the destruction process was completed by water erosion. Or let us remind ourselves that Spain has been paying over 500 years a high price for the fact that the 15th century rulers Ferdinand and Isabella permitted shepherds to devastate the land and to convert virtually the entire land into a stony steppe. These are all the more serious warnings for not being good examples. The guarantee of conservation of irreplaceable values not only in the Krkonose National Park, but in all our nature, however, is the care exercised by our society, protectionists and environmentalists, workers in forestry and management of water resources, in other words, all of us. It is a pity that sometimes we wait doing nothing until the situation becomes too grave.

10501  
CSO: 5000/3011

HEALTH MINISTRY BAN ON FARM PRODUCTS GROWN WITH UNSAFE WATER

Santiago EL MERCURIO in Spanish 27 Feb 83 pp C1, C4

[Excerpts] The date of 1 May is the absolute deadline for eliminating from the metropolitan region those farm crops irrigated with contaminated water. Farmers affected by the measure from the Ministry of Health have not yet done anything to face the approaching situation.

In recent days, EL MERCURIO has visited the fields of Colina, Maipu, Pudahuel and Conchali. They are communes whose crops are among those contaminated by the use of sewage water and fecal matter, shown in the study completed by the Division of the Protection of Renewable Natural Resources of the Ministry of Agriculture.

Farmers and farm workers interviewed said that they are awaiting application of the measure but that because they have no organization to protect them, they have been unable to do anything to seek a solution to a decision that "will bring about our economic ruin."

Measure

The Ministry of Health has banned the cultivation of certain types of green vegetables, produce and fruits that are eaten raw, as in the case of all kinds of lettuce, chicory, parsley, radishes, carrots, raspberries and strawberries.

Effective 1 May, they may not be produced if the land where they are grown is irrigated with water from the Mapocho River, the Maipo River and the Zanjón de la Aguada, which have high levels of bacteriological contamination.

These waterways, with bacteria, parasites and viruses, are the recipients of domestic and urban sewage and their high content of fecal coliforms causes infectious digestive diseases. Santiago holds the record for cases of typhoid fever in the country as the result of the consumption of such products.

Investigation

The ban emanated from the Ministry of Health after experts from the Ministry of Agriculture, in a joint undertaking, completed the investigation, putting together a hydrological plan for the location of crops consumed raw in the horticultural belt of the metropolitan region.

In addition, another map was made of the rivers and irrigation channels flowing through the region, verifying the course and contamination of the Mapocho River, the Maipo River, the Estero Colina, the Angostura River, the Zanjón de la Aguada, El Carmen Canal, and so on.

The investigation was completed with bacteriological examinations of the water, cycles of contamination, volumes of production, crop areas, transport, marketing and handling.

#### Farmers

Luis Calderon, 74, who has been a farmer in the commune of Pudahuel for 52 of those years, told *EL MERCURIO* that "they have been attacking us for contamination for 40 years. For 40 years, farmers, workers and property owners have eaten the same lettuce we sell and nothing has happened to us. If you use a little vinegar with salt to wash the vegetables or a little chlorine, nothing will happen."

He went on to say that the National Health Service had notified them that on 1 May, permission to grow lettuce and other green produce would expire.

Calderon leases the land he works and pays 320,000 pesos a year to do so.

"They should find a solution for us and not throw us out of work," he added. "They can't leave us without jobs forever."

For his part, Juan Gamonal Gatica, a retired farmer with a pension of 10,000 pesos, owns 5.2 hectares of land in Maipú.

There he showed his half-ripe crops of lettuce, celery and parsley. He has also been notified of the end of such crops.

He said that the authorities should install drinking water faucets in rural areas in order to wash produce because the contamination is in that work and not in the crop itself.

Juan Jose Alquinta, a 67-year-old farmer from Conchali, complained because, in his words, they are applying the law of "damned if you do and damned if you don't."

"If we do not work, we are unemployed and a burden to society and if we do work, we are enemies of society because we are contaminating it.

"For many years, we small farmers have had no technical advice. The banks do not loan us money. They government taxes us, but we do not have water that is safe enough to produce green crops.

"That is the vicious circle of our sector. Now they are forbidding us to grow the last thing we have left."

He later admitted that his crops are irrigated with contaminated water: "Of course we know it. We have eyes to see and noses to smell, but that is what we have. That is also why buyers pay us a pitiful sum for every head of lettuce, scarcely 50¢ when they sell them for 20 pesos. They are responsible for washing them, not us!"

11,464  
CSO: 5000/2016

POLLUTED WATERS KILL THOUSANDS OF FISH

Santiago TERCERA DE LA HORA in Spanish 26 Feb 83 p 8

[Text] Concepcion--Thousands of fish, particularly atherine and mullet, have died for reasons still undetermined by yesterday. However, it is thought that the cause is industrial waste. The phenomenon of concern to fishermen along the Penquista coast happened in the Lenga River, a spawning grounds for adult species. The fish affected were under two weeks old.

Yesterday, fishermen in the Lenga cove northwest of Concepcion told LA TERCERA that by dawn, the beaches and shores of the estuary were covered with thousands of fish. Nor did the *pancora* and *cholga* escape.

The area smelled of chlorine and the water exhibited obvious signs of pollution. Some persons concluded that the problem may have originated in the petrochemical sector as the result of a likely opening of floodgates in the waste elimination system.

The report was made to various organizations, causing the Carabineros to proceed to the site to gather information, as did officials from the Fishing Service. In the afternoon, the area was visited by the director of the environment of Talcahuano, Rodrigo Fuentealba, and another official, Digna Henriquez.

The situation alarming fishermen caused officials from the Health Service to take water samples for laboratory analysis. It was also thought that dead fish would be analyzed.

It was originally said that the problem would not be caused by or a result of the "baby phenomenon" since everything happened in the Lenga River and there are no signs of it along the coast or in the bay. It was warned that in the future, the estuary should be closed to any kind of industrial waste flow or other drainage because it is a natural spawning grounds.

Some fishermen said that this is not the first time that the problem has occurred. "Every once in awhile, industries dump their waste here, without realizing the danger to which they are subjecting the population. We hope that the authorities will intervene and adopt the proper sanctions and measures."

11,464  
CSO: 5000/2016

GUATEMALA

RESIDENTS REQUEST CANCELLATION OF DEFORESTATION PLAN

Guatemala PRENSA LIBRE in Spanish 9 Mar 83 p 6

[Text] The National Agency for the Economic Promotion and Development of the Peten (FYDEP) will authorize an agricultural cooperative to deforest 136 caballerias which will seriously damage the ecology of the region.

The secretary of public relations of the presidency yesterday issued a bulletin stating that the deforestation comprises a settlement program which will be carried out by FYDEP and the El Quetzal Federation of Cooperatives for trade and other services.

Our source pointed out that this decision was made after leaders of the cooperative recently paid a visit to Peten, and the FYDEP agency then authorized cutting trees on the 136 caballerias of ground.

The cooperative, as the communique also stated, will be obliged to exploit the wood and natural resources, and ensure that the people have permanent employment.

This project "would also make it possible to develop programs for planting rubber trees, cacao trees and African palms to produce commercial products."

Discontent in the Peten

From their standpoint, however, farmers like Francisco Segura, Anatolio Recinos, Mariano Rivas Cetina, Anatanael Sosa and many others have expressed the opinion that the FYDEP decision will considerably damage the ecology of Peten, especially since the only area which still has 1,000-year-old trees is in the northern area beyond the 17th parallel.

The complainants made the point that the Peten is on the verge of becoming an arid region, similar to the eastern area of Guatemala, because more than 1 million trees are being cut there each year.

Besides felling of the trees to create corn fields for the farmers, the Mexican lumber dealers have been deforesting the region to the extent that there remain very few areas where cedar and mahogany trees can still be found.

The complainants explained that, as a result of the unregulated deforestation permitted under the present FYDEP administration, the wild fauna of the Peten has almost disappeared.

People are now asking where FYDEP will find the 136 caballerias of land to give the cooperative since the only region remaining is the northern area where, in accord with legal regulations, settlement and deforestation have been prohibited, although these things are now being allowed for unknown reasons.

The farmers have made an appeal to President Rios Montt to ensure that, within the context of his nationalist programs which are being carried out, deforestation in the Peten be prohibited.

9972  
CSO: 5000/2017

WATER CONSERVATION URGED IN MANAGUA

Managua EL NUEVO DIARIO in Spanish 24 Feb 83 p 14

Text Managua's population consumed an excess of 6 million gallons of water during the month of January, and the figures for February reflect the possibility that the same level will be reached. Thus the normal supply of this vital fluid is in jeopardy unless all cooperate by using only what is necessary.

The problem is so serious that during January the level of the lake went down between 2 and 3 centimeters daily, amounting to 6 million gallons of water. During the first 23 days of February the lake had gone down an average of less than a centimeter daily.

Interviewed on the problem of the reduced amount of water in the lake, the production manager, engineer Jose Santos Zelaya, said that the consumption of water is always higher during the summer, but the irrational consumption by the citizens exceeds the lake's ability to regain water in winter.

Comparisons between January 1982 and January 1983 show 4 million additional gallons were used in 1983, a sign of excessive and extravagant consumption.

Delay

Zelaya said that the problem is that the water available has to last us until 1990, because the expansion programs to utilize the resources of Tisma and Granada will not be on line soon. This is the result of the lack of economic resources and obstacles which have arisen regarding financing.

Also, other measures have been taken regarding persons who take water from hydrants, and already some of them have been punished by the Sandinist Police with loss of their licenses.

Firefighters have been ordered not to conduct their drills using water from the hydrants, which should be used only in case of fire.

Another problem of extravagant consumption mentioned by engineer Zelaya is the practice of the parks and tank trucks under the Managua Reconstruction Board (JRM) of taking water from the hydrants to irrigate along the city's various highways and arterial routes.

**Complaint**

Zelaya said that this problem has been brought to Samuel Santos, the JRM minister, but the minister has offered no solution. Also there are faucets in parks and markets leaking day and night with no one paying attention to the problem.

He noted that the various crews working in the city cause enormous waste of water, often breaking water mains out of carelessness.

In order to convey an idea of the amount lost from broken mains, Zelaya explained that a 6 inch main loses 500 gallons of water per minute and takes at least an hour to repair, with a loss of 30,000 gallons of the vital fluid.

Considering the seriousness of the situation, which can be remedied if we all take care to use only the water we need, the INAA ~~Nicaraguan Institute of Aqueducts and Canals~~ Publicity and Press Department requests that we all work together to avoid waste.

11,989  
CSO: 5000/2019

## BRIEFS

ULTRAVIOLET LIQUID PURIFIERS--Tana Industries has developed a line of ultraviolet liquid purifiers which can be applied in a broad range of industries and farm installations. They are also recommended for hospitals, laboratories, motor homes and residences in areas where water does not meet standard purity requirements. Tana's TAMI line adds nothing to the water and induces practically no chemical changes. Ultraviolet purifiers are superior to methods based on chemicals such as chlorine or ozone in that they are cheaper to install and operate, eliminate the need for contact chambers, reduce hazards associated with operation, and have no environmental side effects. The minimal radiation dose specified by the United States Department of Health for drinking water is 16,000 micro-watt-seconds per sq cm, at a wavelength of 253.7 nm. Tami purifiers are twice as strong. Another important feature is the thin liquid layer, which is only 1/4 inch (6.5 mm) thick, enabling the purification of even very muddy water. Furthermore, they have been found to be effective against viruses which cannot be filtered even by biological filters. Viruses are more sensitive to UV radiation than to chemical disinfectants. All purifiers are equipped for 220 volt, 50 Hz--110 volt, 60 Hz versions are available on request. Optional accessories include an ultraviolet monitor and intensity meter to indicate radiation penetrating the liquid. The monitor operates a solenoid valve and alarm. In recent Technion tests, drinking water contaminated with mud and sewage water was purified by as much as 100 times. In another test, water contaminated with over 2 million viruses per cubic centimeter was filtered and irradiated to the point where only 1 microorganism per cubic centimeter remained. [Text] [Jerusalem THE ISRAEL ECONOMIST in English Jan 83 p 32]

CSO: 5000/4509

SOUTH AFRICA

CATASTROPHIC DROUGHT SITUATION IMPENDS

Johannesburg THE CITIZEN in English 8 Mar 83 p 2

[Article by Jentje Knuppe]

[Text] Unless South Africa receives substantial rainfall before the end of April, the country will be caught up in its worst drought for 200 years.

Not only will farmers be affected. Without further rain, the cities of Pietermaritsburg and Durban may dry up completely by July or August; several industries served by rapidly shrinking dam supplies will grind to a halt and even national electricity supplies may have to be cut.

According to a countrywide hydrological report completed by the Department of Environmental Affairs, the situation in all parts of the country except the southern Cape with its Mediterranean climate, is now critical.

"We originally thought this was the kind of drought the country could expect every 50 years, but now all indicators point to it being one in 200," the department's public relations officer, Mr Anton Steyn, said yesterday.

Catastrophy

"If it does not rain in a hurry the situation will be catastrophic."

The Albert and Midmar dams which serve Durban and Pietermaritzburg now jointly contain only 93 700 000 m<sup>3</sup>, or 19,9 percent, of their total capacity.

A cut-back on water supplies from these dams of 30 percent was brought into effect yesterday, but if no hard downpours fall within their catchment areas before the end of April, both dams will be completely dry by July or August.

"We don't even know how to handle a situation like that," said Mr Steyn. "It has never happened before in our lifetimes."

"I suppose we could reach the point where tankers will have to taken around the streets of both cities to deliver water taken from other dams." [as published]

Chelmsford Dam, also in Natal, now contains only 6 percent of the water volume it was built for.

#### Serious

So serious is the situation at this dam that even Escom--a priority user of water--has cut back by 55 percent on the supplies it uses for its Ngagane station.

By August the dam will be bone dry. Drilling for underground water has started in hopes that some can be found to alleviate the situation.

The Nooitgedacht and Vygeboom dams on the Komati River--which serve four Escom power stations and several coal mines--are 32,5 percent and 61,7 percent full respectively, and will also be empty by August/September unless heavy rains fall. Both the stations and mines will then come to a halt.

Three dams which supply Campden Power Station, the town of Ermelo and several mines now have a combined water volume of only 17,8-million  $m^3$ , or 10,8 percent of their total capacity.

#### Cut-back

The power station is not yet affected, but other users face a 30 percent cut-back in supplies. By August all three dams will be dry unless there is rain.

The Lesotho-Vaal/Grootdraai scheme which serves Sasol II, Sasol III and the town of Standerton as well as several Escom power stations is 38 percent full and can last only until September or October before running dry.

The situation on the Vaal River is also serious. Already a very low 38 percent, the level of the Vaal Dam is expected to drop to 16 percent by October 1 unless its inflow improves. By that date Sterkfontein Dam will have dropped to 54 percent and Bloemhof to just 2 percent of capacity.

#### Restricted

Supplies from all these dams, for both domestic and irrigation purposes, are now restricted.

For the irrigation farmer, the situation is nothing if not bleak. Most dams in the Transvaal and Free State are to cut quotas for irrigation farmers on April 1, but in some cases even cuts are no longer possible.

There is simply no water available for irrigation.

In the Western Transvaal, Buffelspoort Dam, which serves 1 949 ha or irrigated land, has fallen to 15 percent of capacity. [as published] Below 10 percent the water level does not reach its sluice gates. There will be no winter quota of water for irrigation boards this year.

#### Week's Supply

Klipvoor Dam, which serves about 5 000 ha, has one week's supply of water left. There will be none to give farmers after this runs out unless there are good rains.

Both Lindleyspoort and Koster Dams, which serve 1 587 ha and 560 ha respectively, can no longer supply water for irrigation.

In the Eastern Transvaal, Buffelskloof Dam is only 5 percent full. No water can be supplied from it.

Origstat Dam, serving 3 079 ha of land under irrigation, is only 2 percent full. It can no longer supply water.

Rooikraal Dam on Bloed Rivier is completely dry. It used to serve 250 ha of land.

Further south, Kalkfontein Dam on the Upper Orange River is only 3 percent full. It once served 6 700 ha of irrigated land. The area, once flush and green with lucerne, now looks like a slice of the Kalahari.

Krugersdrift Dam in the Free State contains only 13 percent of capacity. It cannot supply water to 6 600 ha previously under irrigation.

#### Limited

In the Eastern Cape the Kat River Dam (8 percent) is making available limited supplies to citrus farmers, since the area is one of the finest for citrus in the country. By the end of the month, though, there will be no water left.

"We can only hope and pray that there will be rain," said Mr Steyn.

"We have teams working around the clock trying to find areas where underground supplies might exist and be worth plumbing, but even the water table has dropped around the country.

"We are receiving reports constantly of boreholes drying up."

A Department of Agriculture spokesman confirmed yesterday that the situation was exceedingly grim.

The financial assistance section of the department expects to pay farmers more than R30-million in drought relief for the 1982/83 financial year, and even larger sums are being projected for the coming financial year.

The extent of drought damage can be seen from the 1981/82 drought relief figure nation-wide--about R15-million, or half last year's.

The department has officially declared several parts of the country disaster areas in terms of the drought.

Among them are Messina, Louis Trichardt and Soutpansberg in the Transvaal, and parts of Calvinia, Carnarvon, Gordonia, Kenhardt, Namaqualand, Pofadder and Willeston in the Cape.

Urgent

A spokesman for Escom also agreed that heavy rain must fall soon or the drought will become critical.

More than 90 percent of Escom's stations are coal-powered and water is vital for the creation of steam and the cooling of turbines.

"If there is no rain--and we need heavy thunderstorms to fill up dams, not light, soft rain--before the dry season, we may have to ask people to save electricity," he said.

"We will have problems, but fortunately because of our integrated national network, no areas will be isolated from others in this.

"The whole country will be affected by savings on electricity and restrictions."

The Rand Water Board is to make a decision on its methods of restricting water in the Reef area tomorrow. A meeting with the heads of all affected municipalities has been called to decide on a uniform method of saving in all parts of the Reef.

Bulk suppliers such as the Rand Water Board, have been called on to cut consumption by between 20 and 30 percent, as against rates of consumption this time last year.

CSO: 5000/121

## SOUTH AFRICA

### WATER RESTRICTION SURVEY PLANNED

Johannesburg THE CITIZEN in English 4 Mar 83 p 3

[Article by Jentje Knuppe]

**[Text]** THE Department of Environmental Affairs is to make a fresh assessment of water restrictions throughout the country as soon as the results of a nationwide hydrological report are available.

The results, according to the Department, should be known "any day now".

The Department's public relations officer, Mr Anton Steyn, said yesterday that an announcement regarding water restrictions would be made once the report had been studied.

"Until then we cannot really say whether existing water restrictions will have to be tightened or allowed to remain the same," he said.

#### Demands

"The drought situation and the demands on water reserves are being watched on a continual basis.

"At the moment, the drought is grim. However,

the situation regarding water in some of the heavily-populated areas is not quite as desperate as has been made out. Nor is there any set time limit on how long we can last without heavy rainfalls before needing to impose more stringent water restrictions.

"Temperatures are not quite as high as they were a few days ago. This is cutting down on water loss in dams through evaporation. One has to remember, too, that the hotter the weather, the greater the demand is for water.

"There are many variables to be considered before we can make recommendations on water — a few heavy showers, such as we have seen before in March and April, could alter the situation considerably."

On reports that Sterkfontein Dam is to be used to supplement the Vaal Dam, Mr Steyn said this was nothing unusual.

"It has happened in the past and will probably

happen again," he said. "Sterkfontein is 65 percent full at the moment, which is pretty good considering it has no catchment of its own. Once complete it will be the third largest dam in the country."

The Vaal Dam is about 40 percent full at the moment, while those on the Orange River are 64 percent," he said.

According to the Pretoria Weather Bureau, chances for rain over the eastern half of the country are reasonably promising today, while the western half should remain clear and cloudless. Predictions further ahead are not available.

Temperatures at 2 pm yesterday were: Johannesburg (26), Pretoria (28), Bloemfontein (22), Kimberley (27), Durban (26), Newcastle (28), East London (22), Queenstown (22), Port Elizabeth (23), Beaufort West (23), Cape Town (21), Upington (31), Nelspruit (32), Skukuza (38) and Messina (37).

CSO: 5000/121

'WE LIVE IN A HARD, DRY LAND,' WARNS MINISTER

Johannesburg THE CITIZEN in English 25 Mar 83 p 9

[Text] Koedoeskop. — A large proportion of the country's population, particularly the farmers, were living "above their water income" the Minister of Environmental Affairs and Fisheries, Mr Sarel Hayward, said yesterday.

Speaking at a soya bean and irrigation day held at Koedoeskop, he said South Africans should never lose sight of the fact that they lived in a hard, dry land.

The hard truth of drought years was that the water shortage situation would not improve.

"On the contrary, with more mouths to feed each year, we are drawing closer to the point where sheer pressure of human numbers will smother the Department of Environmental Affairs' every effort to provide water for all."

Mr Hayward appealed "to everybody in a position to exercise any authority and influence to impress the crucial importance of limiting population growth on those who need it most.

"By the same token, I want to warn those agitators who encourage Black people to 'breed the

White man out of the country' that they are in effect the true enemies of the very people they profess to serve."

Mr Hayward said this was because drought, famine and hardship hit those who were both historically and economically in the most vulnerable position, the hardest.

Mr Hayward said the time had never been riper than the present "for us all to become actively involved in the upliftment and especially the broader education of the less privileged among us.

Every farmer and employer should play the role of a family planning advisor to avert population numbers turning South Africa into a desert.

Unless population growth was drastically reduced, it would increase within forty years to the extent that it would be impossible to meet consumer requirements.

The goal should be to reduce the population growth tempo — even if it was only to gain time for the development of new water technology, Mr Hayward said. — Sapa.

## DROUGHT RAISES POSSIBILITY OF POWER CUTS

Johannesburg THE STAR in English 15 Mar 83 p 1

[Article by Stephen McQuillan]

[Text] **South Africa will be hit by power blackouts in spring if power stations, already threatened by low water levels, are crippled by the severe and widespread drought.**

This warning was made today by one of the country's leading water supply experts, who criticised the Government for not making a deal on water supplies "years ago" with neighbouring countries.

Professor Desmond Midgley, former professor of hydraulic engineering and director of hydrological research at the University of the Witwatersrand, said the water supply for power stations was reaching crisis stage.

Professor Midgley, now a consulting engineer, said water authorities might have to consider building an emergency pipeline to keep the water supply running to the country's major power station complex in the Eastern Transvaal.

"Supply to power stations is suffering more than domestic supply," said Professor Midgley. "But the system could be replenished from outside."

He said it was feasible to direct water to the power stations but it would be expensive.

"It's the power stations we should be worried about now. If we lose power, our other problems will appear to be insignificant. We have to think about what we can do to make sure we have continued power."

"Water shortages for the power stations are far worse than the shortage we have on the Reef. I would think by October — after dams have got lower and lower — we will be in serious trouble," he said.

Of the six major dams supplying power stations in the Eastern Transvaal, all were seriously low or empty.

The country was fortunate that because of recession demand on power supply had fallen.

The power station complex used about 1 000 million litres of water a day and most of it evaporated in cooling towers. The national water consumption for power stations was about 1,7 percent of the total national supply.

### Demand double

Professor Midgley said the water crisis could not have been averted or foreseen. Dams supplying the Reef were designed to meet expected demand up to 1992 — almost double the present demand.

But the water supply system's capability was based on the worst condi-

tions previously experienced and did not take into account the present drought, said to be the worst for two centuries.

The inflow of water into the Vaal dam was only half of what would have been expected in a normal year.

Professor Midgley criticised the Government for having not made a deal with neighbouring countries on water supply — a move he had for 30 years been pressing for.

"We can get more water by collaborating with our neighbours.

"We have failed to make arrangements to import the very thing needed to continue our exports. It was crazy not to have made this deal a long time ago," he said.

DROUGHT AID SCHEME ANNOUNCED

Johannesburg THE CITIZEN in English 21 Mar 83 p 3

[Article by Jaap Theron]

[Text] CAPE TOWN. — The Prime Minister's announcement at the weekend of comprehensive drought relief schemes and financial assistance for White farmers all over South Africa was followed yesterday by an announcement by Dr Piet Koornhof, Minister of Co-Operation and Development that the Government would provide R20-million to self-governing national states for drought relief.

Dr Koornhof said the national states would control these funds in liaison with his department. His department would also keep a constant eye on the drought situation.

He said the national states were also affected by the serious drought which were hampering the whole country. Black farmers also had stock and crop losses as a result of the drought.

For this reason the Government had decided to embark on a long-term scheme to assist the national states, he said.

Dr Koornhof pointed out that the Government was already assisting the national states with, among others, the supply of clean drinking water, especially in rural areas, the creation of work opportunities, the supply of food for the needy, financial assistance for Black farmers on modern agricultural schemes, the supply of selected cattle stock and sheep and certain fodder subsidies.

Mr Chris Heunis, Minister of Constitutional Development said over the weekend at the Komga Agricultural Society's annual show that the Government had realised

that existing drought aid measures were not enough to keep the farmer on the land in the long term. It had, therefore, instructed the Jacobs Committee to make an in-depth study of short and long-term problems facing the farming community.

The committee would formulate a basic agricultural development policy, aimed at making agriculture more viable in its own right.

The committee would

have to investigate matters such as the financing problems of farmers, the increasing cost of input and the productive capacity of the land.

The Government was also looking forward to receiving recommendations from organised agriculture over drought relieve shemes.

These measures should not be viewed as hand-outs to the farming community but should be seen as an "investment" in agriculture which would benefit the community at large over the long term. Mr Heunis said.

SOUTH AFRICA

SOUTH AFRICA, LESOTHO MAKE PROGRESS TOWARD WATER PROJECT

MB100954 Johannesburg SUNDAY TIMES in English 10 Apr 83 p 20

[By Brian Pottinger]

[Excerpts] South Africa and Lesotho are poised to take a major step towards starting the long-awaited highlands hydroelectric project.

The R1.2-billion enterprise in the mountain kingdom is on the cards despite an all-time low in relations between the countries.

Agreement on launching a R12-million feasibility study is within grasp after nearly 20 years of talks and mounting political difficulties.

Major financing and security issues are apparently the only obstacles.

The completed project would supply Lesotho with all its energy needs and the reef with desperately needed industrial water by the year 2004.

It will be one of the largest development projects in Africa.

This week spokesmen for both sides confirmed that agreement on the feasibility study was imminent. There had been speculation that South Africa was making tougher action by Lesotho against the African National Congress a condition.

In South African rightwing political circles, conversely, it is claimed that Lesotho is using the project to advance its land claims against South Africa and halt cross-border military activities. Chief Majara this week rejected both suggestions.

One of the key issues under discussion is guarantees of performance from Lesotho once the scheme is in operation. South Africa is apparently pressing for tight guarantees.

It has become wary after problems with the Ruacana project on the Angolan border and Cabora Bassa in Mozambique following change of governments.

Observers believe the increasing economic importance of the project will ensure its survival.

The highlands scheme, when completed, would consist of five storage dams, three power stations and a pumping station in Lesotho.

South Africa's contribution would be a tunnel through the mountain.

CSO: 5000/150

SA SHIPPING TO BECOME VICTIM OF DROUGHT

Johannesburg RAND DAILY MAIL in English 21 Mar 83 p 13

[Text]

**SHIP OWNERS** are about to join the list of casualties caused by South Africa's crippling drought, reports Afromar.

There will be no maize for export from the current crop and sea-freight rates are bound to suffer.

World shipping markets were dull last week, the Atlantic being particularly sluggish.

The rate for 70 000-ton vessels carrying grain from the US Gulf to the Continent was about \$8 level, and a 62 000-tonner was paid \$8.32. The water level in the Panama Canal will officially drop from April 4 to 37 feet. This will affect the number of large vessels using the canal. Rates will appear to increase for US Gulf to Japan trade. However, the end result will be that owners will not increase their revenue.

Activity continues out of the River Plate.

Coal charterers paid \$6.75 for 60 000 tons out of Hampton Roads to the UK. Pacific trade continues steady, although a small shortage of large vessels has been detected because owners are reluctant to commit vessels to the East.

Some time-charter rates improved last, although the emphasis was on trips and not period employment. A 68 000-ton vessel came out of lay-up to take a trip via the USA with redelivery Far East at \$7 250 daily.

'Tweendeckers have not been overactive. However, a Freedom was fixed at \$4 500 a day for a trip from Brazil to the US Gulf.

An illustration of poor conditions in the Pacific is that Freedoms are receiving about \$2 000 daily for trips. The South African market is still feeling the influence of River Plate business.

Grain charterers last week repeated the last paid of \$16.75 for 14 000 tons of maize to Venezuela for end of March loading. The US Government had a tender for the shipment of about 10 000 tons of grain and rice from the US Gulf to Mozambique. French charterers quoted 10 000 tons of wheat from La Pallice to Dar es Salaam for a prompt position.

There was some coal activity, although few fixtures were reported. The Far East showed interest — for instance, a Taiwanese cement company quoted a contract for the movement of 165 000 tons in 55 000-ton bottoms,

with shipment out of Richards Bay from April to June this year.

A tender was also in the market for the movement of 45 000 tons to Sri Lanka. Italian charterers had 30 000 tons to move from Richards Bay to West Italy, including the islands, which meant that a self-discharger was required. In the ore section a 30 000-ton cargo was fixed from Port Elizabeth to France at \$9.50. A cargo of 11 000 to 34 000 tons was being quoted from Maputo to Japan for an early position and charterers were indicating \$11, which is on the low side.

Steel was active, a 22 000-ton cargo being arranged from Durban to Turkey at \$14.25, although there is some doubt as to whether this is the correct size. Another cargo was quoted to Turkey. A total of 13 000 tons was to be moved to Greece from Durban and this was thought to be a relet cargo.

Sugar charterers came into the market for 12 000 tons from Maputo to Portugal for a prompt position for which they were talking \$18.

Time charter was mostly for handy-sized bulkers, and again the main interest was for trips to the East.

Rates for trips to the Continent remained steady.

CSO: 5000/146

FUTURE OF FARMERS ENDANGERED BY DROUGHT

Braamfontein FRONTLINE in English Mar 83 pp 14, 16-18

[Article by Riaan de Villiers: "Apocalypse on the Platteland"]

[Text]

**I**T's been a tough summer for suburbanites what with the water in the pool evaporating so quickly, and the gardener being unable to use the microsprays.

**S**carthy press coverage by urban-  
Government for a handout, and still drive a new Merc every year.

This time, it's different.

The drought itself has been bad enough; in some places the most severe in living memory. It has inflicted immense damage on crops, orchards and livestock herds, which will in some cases take years to repair no matter how much it rains now.

Some idea of the extent of the damage can be gained from memorandums handed to the Minister of Agriculture, Mr Greyling Wentzel, during his recent whistle-stop tour through stricken areas. They paint a picture of ravaged crops and grazing and critically low water supplies.

If there is little awareness about the damage done to white agri-business, even less is known about the effects of the drought in black rural areas. One report mentions, almost casually, that some 70 000 cattle had died in Gazankulu, Venda and Lebowa by the end of November last year. By now, it must be many thousands more.

However bad the damage may be, the point is the drought is not just a

centred newspapers hasn't helped them realise that things have been very much tougher outside the city walls.

*Well, so what. Farmers are always complaining. When they have a problem they just go to the*

temporary setback to be followed by a return to normal.

Due to long-term structural problems, agricultural economists say the financial position of farmers has been deteriorating steadily for a number of years and the losses incurred in this year's drought — for the second year running — have plunged the whole agricultural set-up into one of its most serious financial crises ever.

Since 1974, they say, the costs of farming have risen much more than prices, not only majority of farmers drastically cutting profits but also forcing farmers to borrow money in order to get their crops into the ground — in many cases, well over R100 000 and sometimes much more.

In earlier years, cash farmers were common. Today, however, the vast majority borrowed from the farmers' co-ops, which borrow money from the Land Bank in turn.

If the crops fail, the farmers can't repay them so the debts are carried forward to the next year — to be added to a similar new loan for the next crop.

On top of this, farmers don't only borrow money from their co-ops but have increasingly been borrowing from other sources such as commercial banks as well.

The implications are obvious. Most farmers have no cash reserves to tide them over in bad years, and consecutive crop failures land them with astronomical accumulated debts. Apart from the capital sums involved, interest repayments skyrocket as well.

Mr Johan Willemse, chief economist of the SA Agricultural Union, says production credit of grain farmers has increased from R569-million in March 1981 to an estimated R1,156-million in March this year.

Debts carried forward were R106-million in August 1981. It jumped up to R369-million after last year's crop failure. By August this year, it is expected to reach R699-million.

Interest payments increased to R903-million last year — an increase of 344 per cent since 1979.

Where does this leave the individual farmer? Well, take a look at this:

After last year's crop failure, a detailed survey was undertaken to establish the financial position of a group of above average maize farmers.

Average assets were found to be R700 000, with ground valued at R500 000 and loose assets at R200 000.

Average liabilities were R340 000, composed of long-term debts such as bonds; medium-term debts such as hire-purchase of tractors and other equipment; and short-term debts, or production credit, to the tune of R120 000 to R150 000 per year.

Even at that stage, therefore, the ratio between debts and loose assets was less than 1:1, at which stage they should actually have been out of business already.

After last year's crop failure, the only way in which they were able to continue was to borrow another R120 000 — and pray for rain.

With the renewed crop failure, they are obviously, as one agricultural economist puts it: "kniediep".

Last year's drought relief scheme extended production credit over four years, at reduced interest rates.

However, a projection of these farmers' financial position over the next four years found that they would incur a loss of R36 500 this year, R71 500 next year, R119 000 in 1985 and R168 000 in 1986.

With another crop failure this year these figures will now be radically higher.

What this implies is quite simply that most maize farmers in the country are going bankrupt.

Economists emphasise that the cash crisis is completely beyond the control of farmers no matter how good they are.

At least, one may say, the farmers still have their land as security. But this is the joker in the pack. Just how much is land worth, if nobody can buy it? Apparently, creditors have in some cases foreclosed on farmers and sold them out. "But then they don't get any bid for the farm at all and suddenly the farmer's main asset of R500 000 is worth nothing," one economist says.

All this seems frightening to the layman. More important, the situation is frightening agricultural economists too.

It conjures up a spectre of a catastrophic collapse of white agri-business — an apocalypse on the platteland.

Far-fetched? Maybe. But this scenario is lurking uneasily at the back of the mind of agricultural experts.

Hesitantly, one expresses fears that the whole fragile financial cardhouse may come tumbling down if creditors start calling up loans.

"Let's say one creditor gets cold feet and starts calling up. If this is done with a few farmers, people may panic and start selling out on a massive scale. Suddenly, everything is going to be on the market and no-one is going to buy.

"I don't want to cry wolf but it is a possibility."

Dr Piet Gouws, manager of the giant maize marketing organisation NAMPO, says flatly: "A lot of maize producers are going to go bankrupt this year, and co-ops are also in trouble. Basically, we have a disaster situation."

A large-scale financial collapse will have immense consequences, he says. "Banks and co-ops will sit with farms which they will not be able to sell. Farmers will have to find work elsewhere — or fall back on the State. Whole communities could collapse."

"And there are 1,4-million blacks in the Free State — more than in Soweto."

He adds that any large-scale collapse will seriously affect service industries and reverberate through the entire economy in many ways.

Flip du Plooy, secretary of the Transvaal Agricultural Union, is also worried about the possible effects on black employment.

"There is much talk about creating job opportunities for blacks. If 2 000 farmers go under, at least 50 000 workers will be destitute.

The memorandums from co-ops and farmers' associations handed to the Minister during his tour make explosive reading.

One co-op reports that its members' debts have increased from R62-million in 1976/77 to R290-million in December last year. An "optimistic" estimate of income from the current crop is R180-million.

**T**he report warns of the danger. . . "that the sequestration and liquidation of farmers can lead to a general collapse of farm values and will therefore also seriously threaten the security of farmers who are still able to hold on. . ."

One comprehensive report from a large co-op notes a real increase in arrears debts from R8-million in 1978 to R64-million last year — an increase of 687 per cent.

In another area, debts carried forward increased from R65 000 in September 1981 to an estimated R17,7-million in September this year.

Another reports that debts carried over are expected to equal a year's normal production debts this year — which will take as many as 10 record years to pay off.

What is to be done?

Virtually everybody agrees that farmers will have to receive short-term aid to keep them going. A common proposal is that farmers' debts should be consolidated and new subsidised repayment schemes worked out.

But this will cure the symptoms and not the disease, and all say urgent attention to the long-term structural problems is vital.

Opinions differ as to the exact causes of the cost-price pincer. Some blame the high costs mainly on protection of service industries such as fertiliser companies and the Railways. Others say this is a relatively insignificant factor and that inflation is the main bugbear.

Be that as it may, the current crisis points to a massive failure in planning, somewhere along the line.

This is confirmed by one expert who says simply that there has been no proper long-term agricultural policy.

"Do we want a surplus of maize or don't we? If so, who is going to pay for it? Do we want 10 000 commercial farmers on the land, instead of the current 70 000? And are we going to keep the small farmer on the land or not — and if so, how? These are among the questions that need to be answered."

Apparently a few economists have been sounding warnings over the past two

or three years — but these went unheeded.

Now alarm bells have gone off with a vengeance, and Pretoria is full of thick-set men in suits, closeted in meetings all day and drafting memorandums for submission to the Cabinet.

Like Brer Rabbit of old, the Minister has been lyin' low and sayin' nuthin' — at least for the time being. A major response from the Government is expected.

"One thing is certain," an economist says. "Many people will have to burn their candles until late at night to find a solution."

## Meanwhile, back in the Ciskei

Meanwhile, as Free State farmers calculate how much their John Deere fleets are worth, the drought has caused problems of a different kind a few hundred kilometres to the southeast.

Three years of drought has all but destroyed subsistence agriculture in the independent state of the Ciskei and authorites are battling to keep thousands of people alive on a straight cash handout by the South African Government — which they are uncertain will be renewed.

The picture there looks like this:

There are some 30 000 subsistence farmers in the Ciskei, almost entirely dependent on little pieces of land to feed themselves and their families. Migrant labour makes little contribution to this as only about one in ten breadwinners in the rural areas work elsewhere.

The vast majority of families are therefore dependent on subsistence production, growing four to five bags of mealies and some vegetables during a normal season. But the drought has destroyed their crops for three years running.

Just like their white counterparts, dry-land farmers have been borrowing money for seed and other necessities. Farmers now have three years' accumulation of debts, and no-one knows when and how they are going to pay this off.

The only people who have come through are the small minority who are fortunate enough to participate in irrigation schemes. Even here, authorities are getting worried about water resources on these schemes, as some dams are down to as little as 25 per cent.

During last year's drought, stock losses varied between 10 per cent and 30 per cent, and this year similar or even higher losses are expected.

**F**or the last six months the Ciskei government has had a R6-million grant from the South African Government at its disposal. Of this, R1,75-million has been spent on a fodder distribution scheme.

The livestock marketing organisation has been inundated with unpurchaseable animals, and the majority die in transit.

The authorities have also been using the grant to pay people to work on roads, eradicate weeds and maintain dams. Up to now, about 13 000 people have been employed, meeting about a third of the need. These jobs create no wealth and are not permanent, as the grant money goes straight to the workers.

To keep people from "just starving to death", the government has also been running a feeding scheme. A network of welfare workers monitor rural communities and hand out free rations of fortified mealie meal and other foodstuffs to people with no visible sources of income and therefore classified as "destitute".

In addition to this, the government faces the problem of supplying people with drinking water.

Many rural communities are dependent on boreholes. These have been drying up and the authorities have been inundated with requests for water. Tankers are being run day and night, at huge cost, carrying a thousand gallons of water at a time up to 150 km from the water sources. This water lasts about two days.

**I**n case this version of the situation there may seem exaggerated, it should be

mentioned that it comes directly from Mr Bill Godden, Secretary for Agriculture.

"The situation is very desperate here," he says — worse than in February last year when the Ciskei went to the SA government for emergency aid.

"While that money is holding out we have a survival base, and people have the opportunity to buy the bare necessities.

**"But I am filled with apprehension.**  
The drought is worse than ever, the money is drying up.

"We are desperately hoping that the SA government will come to our assistance. Otherwise I don't know what we are going to do."

Negotiations are under way which Mr Godden says, with some delicacy, he does not wish to pre-empt. With equal delicacy he adds: "There is as yet no indication that the grant will be renewed."

Like many others, Mr Godden has become a weather-watcher. "I can't understand just what the hell is going on with the weather.

"I often describe our situation as a war between the cold frontal system of the Western Cape and the anti-cyclonic air mass from the north. If the mass from the north covers us, we get rain. But when we're in the Cape cold front system, we don't.

"We're in a no-man's land."

This seems to be true of more than the weather.

With brutal clarity, the drought has once again exposed the myth that the Ciskei provides a subsistence base for its inhabitants, let alone its migrant workers — and exposed once again the pressing need for a fundamental rethink about land use throughout the country.

But the chances that even the current crisis will bring this about seem as remote as ever.

SOUTH AFRICA

HEAVY RAINS BRING DROUGHT RELIEF; CORN CROP STILL THREATENED

Johannesburg THE CITIZEN in English 5 Mar 83 p 13

[Text]

DURBAN. — Heavy rain fell throughout Natal on Thursday night bringing relief from the crippling drought but not in time to save the maize crop in northern Natal where farmers stand to loose about R80-million.

The spokesman for the Natal Agricultural Union said yesterday that the rains would improve winter grazing and the groundnut crop but was too late to save the maize crop.

The heaviest fall — 65 mm — was recorded at Port Edward, south coast. At Salt Rock, on the north coast, 57mm was recorded.

At Greytown, in the midlands, where no rain has fallen since December 43mm was recorded while Estcourt and Dundee each had 51mm.

In the Midmar Dam catchment area 38mm fell, and at Vryheid, where water restrictions have been enforced for more than two years, 30mm was recorded.

A spokesman for the Natal Landboukooperasie at Dundee, said yesterday that the maize crop would be down about 500 000 tons on last year. He said that even if it rained every day for the next month it would be too late to save the crop.

At the season's start it was estimated that the crop yield would be in the region of 600 000 t but farmers would be lucky now if they harvested 100 000 t.

In stark reality this meant that farmers would be indebted to the Landbank for about R60-million.

He said they were hoping for a reply from the Government before the end of March to a request for all debts to be consolidated and a ten-year period for repayment to be granted.

The future of many farmers depended on the Government's attitude because they could be forced off the land, he said.

CSO: 5000/119

WRC DEFENDS CLOUD-SEEDING OPERATION

Johannesburg THE STAR in English 28 Mar 83 p 2M

[Text]

Another salvo has been fired at the Water Research Commission (WRC) in the war of words over weather modification in the drought-hit Eastern Transvaal.

In addition, farmers at Bethlehem in the Free State are asking that the scheme for weather modification be halted as it disrupts their normal rainfall pattern.

WRC officials told The Star that the work is of national importance. Water demand would top supply by about the year 2020 and quality is rapidly deteriorating owing to increased usage and pollution.

They explained that Nelspruit, centre of their Lowveld operations, had been chosen because of data collected during a previous cloud-seeding project.

Critics of weather modification in the Lowveld, led by Mrs Silvia Norris of Tonetti, say that WRC arguments on modification are "riddled with contradictory information".

Pointing to a 1977-1981 exercise in the Lowveld, Mrs Norris says: "It was most costly and produced no conclusive information that the cloud-seeding stimulated rainfall.

"One consultant alone was paid R140 000, I understand, yet urgent pleas by farmers in the Kaap Valley for a dam on the Kaap River have been turned down owing to lack of funds."

Mrs Norris says that, apart from all the claims and counterclaims, she would ask why so many Lowvelders complain if the area has had more rainfall?

Positive results for research into rainfall stimulation are by no means assured, but the national water supply-and-demand situation is such that South Africa cannot afford not to investigate this possible alternative source of water before a crisis situation arises, says the WRC.

Research into methods of increasing the atmospheric water supply is similar to the national search for oil. In both cases there is no guarantee of success and the costs are high but a positive result would be of tremendous value, the WRC says.

CSO: 5000/146

## MAIZE TO BE IMPORTED, DESPITE GOOD RAINS

Johannesburg THE CITIZEN in English 23 Mar 83 p 5

[Article by Keith Abendroth]

**[Text]** GOOD rains in many parts of South Africa's critically important maize triangle have fallen too late to stave off a threat that the country will — ironically — have to make massive maize imports this year.

It was learnt yesterday that latest estimates are that the maize crop will drop to a low of about 4.7-million tons as a result of the drought.

With a carryover of some 1.2 million tons in stock, this could mean that the country would have to import substantially to meet a demand that could be as high as 6.5 million tons.

It is understood in Pretoria that a major announcement on the crisis can be expected soon — possibly even by this afternoon.

A spokesman for the Transvaal Agricultural Union said yesterday that in most cases feedback indicated that rainfalls had been too late to save a big part of the crop.

In some areas there had been "very good rainfalls" but almost generally they were too late,

also, to enable the winter grazing to re-establish itself in time for the winter.

Hopefully the rain would help to bring up dam levels in some areas, but the farmers who would gain most were the winter cereal producers — many of whom could now go ahead with plantings under considerably more favourable conditions, he said.

Dr H O Gevers, of the Summer Grain Centre, said that there was strong talk of maize imports at present — this despite the fact that only two years ago the republic had had a massive overproduction.

He said that the country's temperamental rainfall had now seen a record maize crop of about 14 million tons in 1981/82 reduced by more than half.

Meanwhile there is concern at top official level over the fact that maize production profits are decreasing to such an extent that a more market related economy is becoming ever more vital.

In 1973/74, it was learnt, the industry had a turnover of R633-million with a production cost of R195-million and an income above cost of R438-million.

But in 1980/81 the turn-

over was R1 674-million, the cost R1 326-million and the income over cost only R348-million.

Three years ago, with a crop of 8.3 million tons, the profit from maize production was still R34-million.

But in 1981/82, with a similar crop, farmers suffered a loss of R639-million.

SOUTH AFRICA

BRIEFS

STOCK SYMBOL WARNING--Umzimkulu.--Transkei was being ravaged by the worst drought in living memory, Prime Minister Chief George Matanzima said at the weekend. Chief Matanzima, who appointed Chief Gobizizwe Msingaphantsi as the Zwelethu Tribal Authority, urged Transkeians not to raise stock as useless status symbols but as saleable commodities. "The stock losses which have occurred as a result of the drought should in future be a lesson to our people to raise stock as a saleable commodity, not merely as a useless status symbol. Transkei is being ravaged by the worst drought in living memory and I am happy to note, however, that the district of Umzimkulu is in a far better condition than most areas in the country," the Prime Minister said. Chief Matanzima urged the new chief to unite his people and to maintain steadfast support and loyalty to the Transkei Government and reminded him of the diversity of tribal entities in the district, namely Ntlangwinis, Bacas and Pondos. He urged all chiefs to have a thorough understanding of the implications of leadership, to have personal flexibility and skills to vary their attitudes, not to discriminate between peoples of different political persuasions provided they were legitimate, and to desist from accepting liquor as bribes from their subjects.--Sapa. [Text] [Johannesburg THE CITIZEN in English 8 Mar 83 p 13]

WHEAT OUTLOOK POOR--South Africa might face a very poor wheat crop in 1983/4 because of the severe drought after its best season ever this year, says Wheat Board manager Denis van Aarde. He told Reuters although it was too early to make an estimate, rainfall has been very poor so far, especially in the Orange Free State. A great deal of moisture was needed to raise the water table, but with March the last month that substantial rains can be expected before the dry northern winter, this is most unlikely. The drought has devastated the summer grain crops. Maize officials expect the poorest output in 10 years. [Text] [Johannesburg THE CITIZEN in English 8 Mar 83 p 22]

MAIZE IMPORTED--The Maize Board has decided to import 1,5 tons of maize, mainly from the United States, to make up the shortfall caused by the drought, the board announced in Pretoria yesterday. A spokesman said the maize would be imported at a landing cost to the consumer of \$200 per ton. The quality of the maize is understood to be inferior to that of local maize. Meanwhile, the board is still considering raising the price of maize. The maize producers' body, Nampo, has recommended a 25 percent price increase.--Sapa. [Text] [Johannesburg THE CITIZEN in English 24 Mar 83 p 5]

## WATER SHORTAGE MAY FORCE SCHOOLS TO CLOSE

Harare THE HERALD in English 16 Mar 83 p 5

[Article by William Bango]

**[Text]** AT least \$75 000 allocated to district councils in Wedza for water projects last year has not yet been used because of the shortage of drilling rigs, the district administrator, Cde Dean Changa Chikomo, has said.

He told Mashonaland East MP Cde Joseph Jekanyika at the weekend that the money might have to be returned to the Government because of the shortage of drilling rigs to sink boreholes in the area.

"It is a sad situation because most of the 32 schools in the area will be forced to close down before the end of the year as the drought has caused a severe shortage of water in Wedza.

"When I applied for these funds on behalf of the district councils, the cost of sinking one borehole was about \$6 000. But today it costs more than \$10 000 to do the same borehole and nothing has been done."

Cde Chikomo said the shortage of water would affect the operations of schools, clinics, dip tanks and other projects in Wedza. "Unless we are given drilling rigs soon, our health and educational establishments will be crippled before the next rains."

Although there was some rain last week, the

chances of keeping schools open were minimal since the drinking water situation had not improved. Rivers and wells were drying up and most of the water in the few boreholes was nearly finished because it was being used by more people than usual.

Meanwhile, a boarding secondary school in the area, St Anne's Goto, might not reopen next term because "its water reserves are at the October level".

The headmaster, Cde Fergus Rinashe, told Cde Jekanyika that the water reserves, if strictly rationed, might keep the school open up to June.

On the drought, the district administrator said he had received maize from the Grain Marketing

Board and had asked the district councils to identify the needy and pinpoint suitable distribution points.

"The maize we have received is not for drought relief because we are going to sell it at \$16 a bag. I am only waiting for the Wedza district council and the Zviyambe rural council to report to me on the number of

people affected and those who can afford to buy the maize.

"At the same time, officials from my office are in the district assessing the number of people who are destitute and who cannot afford to buy the maize for drought relief purposes," he said.

The chairman of the Zviyambe Rural Council, Cde Richard Dune, said about 400 of the 456 farmers in the area did not have enough food. He said he would get the maize at the district administrator's office after the council had repaired part of its hall which was blown down by a hailstorm.

Cde Jekanyika ordered Cde Dune to get the maize immediately to save the farmers who were starving in the area. He was angered by the chairman's comments that he would get the maize after they had repaired the hall for storage space.

Said Cde Jekanyika: "You must take the maize to the people as soon as possible. The question of storage in your damaged hall is out because the maize can either be put in a church or classroom and distributed to the people on the spot.

"Some councillors and community leaders do not care about the people who are starving because they have the food. You must arrange a date on which people will assemble here for the food and then send a truck to collect it. You don't need to store the maize when 400 people are starving."

CFU DRAFTS DROUGHT RELIEF PLANS

Harare THE HERALD in English 25 Feb 83 p 1

[Text]

THE president of the Commercial Farmers' Union, Mr Jim Sinclair, said yesterday that he had submitted drought relief proposals to the Ministry of Agriculture.

Mr Sinclair could not say when the reply could be expected and declined to give details of what he termed "a drought package". He hinted, however, that it covered financial assistance.

He was explaining in an interview the findings of a CFU team which flew for seven hours on Monday and Tuesday assessing countrywide drought damage.

"We heard yesterday that it is the worst drought in 83 years," said Mr Sinclair. "Overall impressions are that the drought is by no means over, despite recent rains in some parts of the country.

"More rain is needed to bring the crop through."

The situation was nothing short of a disaster as both game and livestock continued to die in large numbers.

Sometimes the flying team spent 1½ hours without seeing a blade of grass and very few livestock.

Mr Sinclair said: "We are doing everything we can to recoup losses and we need the Ministry of Agriculture to get something done. Saving the national herd will be a crucial and costly exercise this season."

Moving livestock from drought-hit areas to ranches with grazing would cost a lot. The union was anxious to see steps taken to relieve pressure faced

by ranchers in the southern parts of the country.

He said this could be done either through the Cold Storage Commission feedlots — which should not be for slaughter but for survival — or in the form of easier loans to farmers willing to buy affected stock as was done during the 1968 drought.

The move would give other farmers the chance to get into the cattle industry.

"We are looking for relief in the form of debt re-scheduling as some farmers will be unable to repay loans this season," said Mr Sinclair. "We are in favour of the idea to establish a drought insurance scheme to which the farmers and the Government would both contribute."

A delegation had been to the Ministry of Labour and Social Services to discuss possible retrenchment of farm workers.

He said that drought, which had taught producers that it was difficult to farm in Zimbabwe, had now made it necessary for them to look for Government aid to supplement their commitment to produce more food.

"Large parts of the country are disaster areas, but farmers are the most resilient people," he said. "They keep their confidence in the industry going."

Meanwhile, a drought relief committee has been set up in the Ministry of Agriculture.

Mr Sinclair is the guest speaker at a meeting of the Ayrshire Farmers' Association at the Ayrshire Club today.

CSO: 5000/123

## ILLEGAL DAMS THREATEN IRRIGATION

Harare THE HERALD in English 25 Feb 83 p 3

[Text]

MUTARE.

MORE than 430 plotholders at Nyanyadzi irrigation scheme 100 km south of here have come out strongly against unauthorised damming of their supply river by farmers upstream and have raised money to help the Government move the farmers up the valley slopes and break down the dams.

They felt that, as the levied users of Nyanyadzi River water, they could not be held to ransom by "chancers" who had taken it upon themselves to tap the water by constructing personal canals leading to their gardens.

"We agree to the use of buckets, but not to block the river — we deplore that," the farmers' committee chairman, Mr Ephraim Nyanhanda, said during a meeting with officials of the Lands Inspectorate.

Up river they had found rock, rubble and concrete dams, which peasant farmers had built, resulting in a mere trickle reaching the scheme.

The Lands Inspector, Cde Alois Chitavate, said: "We have told these illegal farmers that it is not the law and the practice should stop forthwith.

"Most of the water is being lost upstream and we have to devise ways and means so that the water comes down here," he said.

Mr Cornelius Joubert, the Regional Lands Inspector, accused the people farming along the river of being unwilling participants in a rapidly changing society where involvement of all was called for.

"People along the river are not interested in learning at all," he said.

He said it was estimated that 80 ha of illegally cultivated land was under unauthorised irrigation.

A representative of the farmers said women at the scheme were having to walk to and from the Odzi and Sabi rivers, about 15 km away, to fetch water in buckets.

The farmers expressed fear that their annual June crop of beans might never be planted because the water supply would run out. In addition to moving the highland farmers, the Nyanyadzi Co-operative Farmers' Committee said it was willing and ready to feed those resettled, should the need arise.

Mr Nyanhanda said that the committee was also appealing to the Government for \$36 000 to add to its \$3 000 which would be used to fence off the irrigation scheme which, since the end of the war, had fallen prey to hungry land seekers who have squatted there indiscriminately. — Ziana.

CSO: 5000/123

CATTLE DEATH RATE RISING

Johannesburg THE CITIZEN in English 8 Mar 83 p 13

[Text]

HARARE. — Zimbabwe's crops and livestock are now in a "desperate situation", according to the fortnightly Crop and Livestock Report published in Harare yesterday.

The report, issued by the Department of Agricultural, Technical and Extension Services, says the rate of cattle deaths has increased in parts of Victoria province alone, more than 5 500 cattle died in February.

Because of the general lack of rain in the past fortnight, crops which had increased rain last month, had begun to deteriorate again.

Only extremely limited success with any crops was reported from the southern provinces, except in some cases under irrigation. At Beit Bridge, a foot and mouth disease outbreak had forced cattle sales to stop. The sales were part of the Cold Storage Commission's "operation cattle rescue" to save animals in the south from certain death.

In the Chisumbanje and Middle Sabie areas,

where a significant proportion of Zimbabwe's wheat is grown under irrigation, it had become apparent that no winter crop would be grown because of the low level of the Sabi River and poor irrigation supplies.

Grazing was deteriorating and many communal areas had reported none at all, the report said.

In Masvingo province, oriental tobacco had made a "remarkable recovery", but still needed more rain. Irrigated cotton was also showing some promise.

But maize, sorghum, soya beans, edible beans, munga and rapoko were all failures and the remark about grazing read: "In general there is no more grazing."

The report listed the following cattle deaths in the province: Chibi 1 500, Bikita — two percent of all stock, Mwenezi 2 700, Sengwe 200, Devuli Ranch 152, Gutut 1 000, Masvingo 660 and Saka 270.

In the Midlands, there were no expectations of either flue-cured or Burley tobacco. Apart from Gokwe and Sanyati and

some irrigated areas, crops and grazing ranged not much beyond nil.

A total of 858 cattle deaths were reported from Mberengwa and Zvishavane.

Water levels throughout the province were critical and the water drilling programme has to be expanded "immediately", the report said.

Northern and southern Matabeleland had no rain in the two weeks and the water supply in both areas was "critical". In Matabeleland south, "the great majority of dry land crops will produce nothing" and maize in Matabeleland north had "either died or is at the last stage of wilting."

In the Beit Bridge district, cattle were dying and deaths had also been reported in Gwanda.

In Manicaland, rivers and streams were drying up quickly, and dams were very low. The condition of cattle in commercial areas was "fair to good", but "poor to very poor" in communal lands where "more and more" cattle deaths were being reported.—Sapa.

BRIEFS

'MUDZI DISASTER AREA'--Mudzi must be declared a disaster area and receive full Government food relief supplies, says the district council chairman, Cde Bainos Mupezeni. When an MP for the area, Cde Abraham Kabasa, visited the Kambeva village in the Nyahuku area in Mudzi at the weekend, members of the Zondani family spent about five minutes struggling to stand up and greet him because of hunger. The family is among a large settlement of shift cultivators living in the area long condemned by the then colonial governments as uninhabitable because of tsetse fly. Two schools in the area have cancelled physical education and education with production this term because pupils are too weak to take part in the programmes. And in a related development, local businessmen plan to boycott purchasing maize meal if the Government continues to enforce price control regulations on consumer goods in the area. They complained that they were being fined when they took all the risks to get the maize meal by buses to the communal lands. [Text] [Harare THE HERALD in English 17 Mar 83 p 1]

BUHERA WATER NEEDS--The Buhera district needs immediate supplies of food and water, the District Administrator, Cde Moses Mandisodza, has said. In an interview this week, Cde Mandisodza said if no immediate measures were taken, the food shortage in the district would reach a critical stage. "We need more lorries and manpower to distribute food to the various centres in the district," he said. Most of the boreholes had dried up. "We urgently need four drilling rigs and experienced surveyors to help us cope with the problem."--ZIS. [Text] [Harare THE HERALD in English 12 Mar 83 p 5]

MIDLANDS CATTLE DIE--Gweru. Although people in Mberengwa are coming forward to sell their cattle in one of the worst drought-hit areas of the Midlands, most of the beasts are in such poor condition that at a sale at Negove early this month three of the cattle died in the sale pens before the sale began. The provincial veterinary officer for the Midlands, Dr Richard Clatworthy, said the Cold Storage Commission was only accepting between 30 and 40 percent of the cattle offered, but even those accepted barely made it over the "X-grade". Although the average price of cattle rejected by the CSC is about \$50, one is known to have been bought for \$20. Mberengwa and Mazvihwa in the southern part of Zvishavane have been the worst hit areas in the Midlands. Out of 9 086 cattle that died in the province last month, 3 979 cattle died in Mberengwa and 3 180 in Mazvihwa. Worse still, dipping may have to be curtailed in the two areas because of a lack of water. [Text] [Harare THE HERALD in English 15 Mar 83 p 1]

BATONKA FACE STARVATION--Bulawayo--Three Zimbabwean government ministers have promised to recommend an immediate resumption of food aid to the people of Binga, about 300km north of Bulawayo, after they watched a Batonka tribeswoman gather grass seed for food at the weekend. The Minister of National Supplies, Mr Enos Nkala, the Minister of Trade and Commerce, Mr Richard Hove, and the Minister of State Security in the Prime Minister's Office, Mr Emmerson Munangagwa, were told that Batonka peasants were facing starvation because of the drought. Food aid under the drought relief programme was temporarily halted last year after dissidents destroyed trucks carrying food and intimidated relief workers.

[Text] [Johannesburg THE CITIZEN in English 8 Mar 83 p 12]

TOPSOIL LOSS--Mutare. The Manicaland regional lands inspector, Mr Cornelius Joubert, has blamed poor farm management in the Sabi River catchment area for the loss of more than 96 million tonnes of topsoil into the river every year. "In nine years the soils will not support a crop to maximum yield and in 27 years it will be a complete desert if we carry on at this rate," Mr Joubert said in an interview.--Ziana. [Text]

[Harare THE HERALD in English 25 Feb 83 p 3]

IRRIGATION PROJECT--Work on the 332 ha Tsovane irrigation resettlement project in the Lowveld is under way, the Government announced yesterday. The project is the beginning of an expanded irrigation programme in the rural development exercise during the three-year transitional development programme. The Ministry of Lands, Resettlement and Rural Development began the Tsovane project through the Agricultural and Rural Development Authority. It is funded by Zimbabwe and West Germany, which will meet two-thirds of the costs. West Germany is expected to provide a soft loan of up to \$4,3 million for the entire project. The money will be used on pumps for the Sabi River; delivery pipelines and flow control dams; flood irrigation layout, and houses for settlers. The Ministry of Construction is already on the site. The unique feature of the project is that it involves local farmers, selected either as irrigation employees or settlers. During the first year some of the irrigation units will be allocated to settler-irrigators while the remainder will be cropped by ARDA through its Chisumbanje Estate. As settlers gain operational and administrative experience, the whole project will be gradually handed over to them. The project is intended to prove that resettlement can be more viable on an irrigation basis. The Tsovane scheme will ultimately be occupied by 100 families earning their living entirely from irrigation. [Text] [Harare THE HERALD in English 24 Feb 83 p 7]

IRRIGATION PRIORITY--The irrigation programme will assume a very important role in settlement during the three-year Transitional Development Plan, said the Secretary for Lands, Resettlement and Rural Development, Dr Langford Chitsike, yesterday. Dr Chitsike said this emphasis would also mean that more development funds and resources would be allocated to irrigation projects. It had been realised irrigation would contribute a bigger percentage to the national economy in future and would be a safeguard against drought. It was possible that through irrigation Zimbabwe

could reach self-sufficiency in several strategic and essential commodities such as wheat, rice, soyabean, cotton and tobacco, said Dr Chitsike. An increase of such products would earn the country precious foreign exchange either through an increase in exports or a cut in imports of such commodities. He said: "It is because of all these advantages and benefits of irrigation viewed against the limitations of dryland farming that the ministry has decided to embark on an expanded irrigation programme."

CSO: 5000/123

LITHUANIAN OFFICIAL DISCUSSES POLLUTION PROTECTION FOR BALTIC SEA

Vilnius SOVETSKAYA LITVA in Russian 4 Mar 83 p 4

[Article by EL'TA [Estonian News Agency] correspondent R. Grumadayte: "The Baltic: Concerns and Prospects"]

[Text] More than 600 structures for the purification of runoff water, which have been placed on the territory of the republic, protect the Baltic Sea. This network of water filters was created within the framework of the program to protect the Baltic Sea against pollution. EL'TA correspondent R. Grumadayte was given more details about the work in this area by member of the USSR Interdepartmental Committee to Protect the Baltic Sea Against Pollution, Deputy Minister of Reclamation and Water Management, Lithuanian SSR, Yu. Sabalyauskas.

"Approximately a year ago we received an alarming piece of news -- in the water area of the port of Klaypeda a British tanker, the Globe Asimi, had had an accident. Crude oil covered the beach resorts and had polluted the Baltic. However, the holiday throngs that came here in the summertime were able to go swimming in the sea again and to sunbathe on the sandy beaches -- thanks to the efficient steps taken immediately after the catastrophe, it was possible to eliminate the consequences rapidly."

Maritime catastrophes like that are an infrequent phenomenon. The sea has a more terrible enemy -- slow pollution. It begins when raw industrial water is fed into a small stream that is remote from the sea. As it makes its trip along the major rivers, the pollutant can get into the Baltic. The scope of this danger is not difficult to imagine if one recalls that the drainage area of the Baltic includes eight countries with an intensive industry, the population of which constitute approximately 150 million people. And the Baltic Sea is a shallow one that makes a long wedge into the continent and can freshen its waters only once every 50 years.

The need to preserve the assets of the Baltic prompted the countries in the region to develop and sign a special convention to protect the environment of the Baltic Sea. Included here are the problems that are linked with the regulation of the runoff waters and waste containing polluted atmospheric air, with water pollution resulting from the operation of ships, and also the problems

linked with the exploration of the shelf zone. In our country these operations are coordinated by the Interdepartmental Committee to Protect the Baltic Sea Against Pollution, which is under the USSR Ministry of Reclamation and Water Management. The basic task of the national program is to achieve a situation in which, in 1985, the dumping of unpurified water into the bodies of water that drain into the Baltic Sea will be discontinued.

Special water-protection measures in the course of the fulfillment of this program are also being undertaken in our republic. Despite the fact that Lithuania has the shortest sector of the Baltic littoral, the Neman and its tributaries bring into the sea more water than the rivers of neighboring Latvia and Estonia.

The guardians of pure water are the primary purification structures at the enterprises and their complexes in large cities. Recently, for example, new purification systems were activated in Klaypeda, Radvilishkis, Rokishkis, and Panevzhis. In Radvilishkis, for example, there has been used for the first time in the practice of our country's cities an unusual biological but more effective physicomechanical method of purification. Here the chemical reagents collect the harmful substances into large clots, which settle to the bottom. The filtered water is additionally purified in special bodies of water and it is only after this that the absolutely pure water is released into the open bodies of water. A system that has become a true covering detachment to prevent any dangerous substances from getting into the rivers is the system of removing the dangerous substances from them, which is being introduced at metal-processing plants. In addition, better use is being made of production waste at enterprises in the food industry.

At the present time not a single enterprise or shop is activated without well-equipped systems for purifying the water and the air. At the Mazheykyay Petroleum Refinery, for example, a reliable protective complex is in operation. It is able to purify all the runoff water. With the activation of the second phase of the enterprise, additional devices to prevent pollution will simultaneously begin operating.

All the large-scale agricultural enterprises, like the industrial ones, are also being built together with purification or decontamination structures. A careful watch is being kept here to assure that there are no emergency runoffs. No less dangerous is the so-called dispersed pollution from gas pumps, poorly sealed storage facilities for fertilizers, and individual pieces of machinery. In order to reduce this kind of pollution, water-protection zones have been set aside near almost all the rivers, streams, and lakes in the republic. These are, as it were, green barriers that keep back the harmful substances.

The strict sanitary and technical requirements are being employed in the port of Klaypeda and in the republic's coastal zone. Special ships collect from floating bases the water that has been polluted by petroleum products, water being dumped by the household sewerage system, trash, and waste products that are harmful for people's health and for maritime fauna, and deliver them ashore for purification and decontamination. The work is executed here by

two special complexes. The protective devices on each ship that goes out on a trip operate just as reliably as the basic navigation devices.

A decade has passed since people began to be seriously interested in the Baltic Sea. The measures that have been carried out have already provided a considerable amount of assistance to the sea -- their effect is attested to by the new data provided by scientific research studies.

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CSO: 5000/78

USSR

GOVERNMENT PANEL DISCUSSES ENVIRONMENTAL ISSUES

PM060715 Moscow IZVESTIYA in Russian 2 Apr 83 Morning Edition p 2

[TASS report: "Commission Session"]

[Text] A regular session of the USSR Council of Ministers presidium commission for environmental protection and the rational utilization of natural resources was held 31 March.

Reports were heard from leaders of the USSR Ministry of Power and Electrification, the USSR Ministry of Nonferrous Metallurgy, the USSR Ministry of the Construction Materials Industry, the Ministry of the Chemical Industry, the Ministry of Mineral Fertilizer Production, and the Armenian SSR Council of Ministers on measures taken by them to improve the protection of the atmosphere in cities in the Armenian SSR. It was noted that a number of enterprises under the above-mentioned ministries are lagging behind the set time limits for implementation of environmental protection measures.

Gorispolkoms in the Armenian SSR and the Republic Administration for Hydrometeorology and Environmental Control are slack about using the rights granted to them in the struggle against breaches of the law on protection of the atmosphere.

The commission instructed the relevant organizations to intensify their struggle against air pollution in cities in the Armenian SSR and especially to rectify quickly the lag allowed in commissioning the new dust-and gas-purification equipment and to improve the utilization of existing installations.

A report by the USSR Ministry of Ferrous Metallurgy was examined on the progress of work for the recultivation of lands and the utilization of fertile soil layers during exploitation by its subordinate enterprises of iron ore deposits in the region of the Kursk Magneti C Anomaly. Serious shortcomings in this work were noted, especially in the work to improve the fertility of unproductive soil taken from the Chernozem layers.

The commission instructed the leaders of the USSR Ministry of Ferrous Metallurgy, the Tsentroruda and Soyuzruda associations, and the Lebedinskiy, Stoylenskiy, and Mikhaylovskiy mining and enriching combines to take additional measures to ensure the timely recultivation of lands and the rational utilization of fertile soil layers as envisaged by the land legislation. Other matters were also examined.

CSO: 5000/83

## HIGHLIGHTS OF PROGRAM TO PROTECT, CONTROL ENVIRONMENT

Moscow MOSCOW NEWS in English No 12, 27 Mar-3 Apr 83

[Text]

Seven scientific and technological programmes designed to improve environmental control and protection are being implemented in the USSR in the current five-year plan period. A review of their implementation has just been published by the State Committee for Science and Technology. The following data is taken from the report.

• Until recently the removal of 90 per cent of industrial atmospheric exhausts was the best attainable level. Now there are new methods and devices which are created to remove hard particles from the smoke of thermal power stations to achieve a level of 99 to 99.5 per cent. One such system has been successfully tested at a 500,000 kw power unit at the Troitskaya State District Power Station in the South Urals.

• A new filter for purifying steel smelting furnace gases is nearing completion at the Volzhsky Car Factory. The filtration surface is 6,000 square metres.

• The USSR national economy annually consumes about 350 cubic kilometres of water - no more than eight per cent of the annual river flow. But the figure is far from equal for all regions. In Uzbekistan, for example, it surpasses 70 per cent. In this connection, it is becoming increasingly urgent to transfer part of the flow of Siberian rivers to Central Asia and Kazakhstan. To implement this plan a canal running for over 2,000 kilometers will have to be dug as well as large-scale irrigation systems. The projects will be based on the results obtained at several experimental production systems which are to be built in Siberia and Kazakhstan.

• The first stage of the automatic information system for water control and usage should be built by the end of the current five-year plan period.

• An automatic control system is being built for the comprehensive utilization of all this country's 2,600 reservoirs, whose

capacity exceeds one million cubic metres each.

• Last year's tests have proven the 100-per cent efficiency and high reliability of the fish protecting device for river water intakes. In the Volga basin alone its use will allow the saving of over six million young whitefish a year.

• An All-Union Environment Observation and Control Service is being organized in this country.

The recycling rate for many industrial and domestic wastes will have to be increased several times over by 1985.

Naturally, these and other environment protection measures require considerable investments. State allocations for these purposes grow with every five-year plan period: for 1971-1975 - 6,300 million roubles; for 1976-1980 - 9,300 million roubles; and for 1981-1985 - to 10,300 million roubles.

These expenses, however, can provide not only an ecological effect but a considerable economic one as well.

• Aluminium extracted from waste is 8 to 10 times cheaper than that extracted from bauxites.

• One ton of steel melted from iron scrap costs 15 to 20 times less than that melted from other sources, considering all the costs beginning with ore mining. Air pollution is reduced six times in the process, water pollution by more than three times.

In the Soviet Union we do not recognize a conflict between environmental protection and economic growth. We think that given rational organization, harmony between the first and the second is quite attainable. We can put it this way: ecological balance in the world as a whole is secured at a relatively acceptable level owing to this country to a considerable degree. And despite the activity of the capitalist countries, which account for 27 per cent of the world population, 58 per cent of world industrial production and 63 per cent of environmental pollution.

## CONTROL OF NOXIOUS INDUSTRIAL GASES IN ARMENIA

Yerevan KOMMUNIST in Russian 13 Feb 83 p 1

Article by Armenian press correspondent Dzh. Balagezyan: "Smog Control"

Text Smog from sulfurous anhydride over the town of metallurgists, Alaverdi, will be completely controlled. Confidence in the truth of this statement was inspired by the successful industrial tests of a new semi-industrial device developed by specialists at the mining and metallurgy combine under the supervision of Ovannes Davtyan and now being tested there.

The device, representing a practical implementation of Davtyan's scientific ideas, makes it possible not only to eliminate all emission of harmful gases into the atmosphere but also to use these gases to produce a valuable chemical product, sulfuric acid.

The nature of so-called acid rain suggested the idea for this device to O. Davtyan.

O. Davtyan reports that observations have shown that sulfuric-acid or sulfuric-nitric-acid rains frequently fall in the vicinity of operating chemical plants, non-ferrous metallurgy plants and district heating plants. Acid rain is one of the most dangerous and serious forms of environmental pollution. It penetrates the soil and washes out the mineral substances in it, thus depriving the plants of basic nutrients. Acid rain also is a threat to animal life and it inflicts irreparable damage to historical and cultural monuments. Acid rains destroyed nearly 700,000 hectares of forest in Western Germany alone, in recent years. All fish and other forms of life were destroyed in some ponds and lakes in Europe. In large cities in America, practically every large building, including cathedrals and other cultural landmarks, suffers from the harmful action of acid rain. Vast sums are spent to clean and restore these buildings and these efforts are often fruitless.

What causes acid rains?

According to O. Davtyan's theory, sulfur dioxide and nitric oxides emitted into the atmosphere by industrial enterprises are readily adsorbed and enter into a specific chemical bond with carbon. It just so happens that smoke particles, soot, play the role of such an ideal adsorbent and, at the same time, act as a catalyst

of oxidation for such gases in the atmosphere. Interaction of the gases and the oxygen in the air on the surface of these particles is accompanied by catalytic oxidation with the formation of sulfurous anhydride and other products of nitrogen oxidation. They then form, under the effect of atmospheric moisture, aqueous solutions of sulfuric acid and nitric acid which fall to earth in the form of acid rain.

O. Davtyan worked out a new theoretical position on the basis of his own observations and devised apparatus which made possible a continuous liquid-contact method of converting sulfurous gases into sulfuric acid. Industrial tests confirmed the high technological and economic effectiveness of the device; the level of oxides of sulfur in the tail gases at Alaverdi Mining and Metallurgy Combine was reduced by 90 to 95 percent while the use of waste gases increased daily production of sulfuric acid by 35 to 40 tons.

Professor Ovannes Davtyan, doctor of technical sciences, is the author of studies concerning the most urgent problems of present-day physics, chemistry and applied mathematics. He has made significant contributions to the basic research and development of the fundamentals of electrochemical production of energy with the aid of so-called fuel elements and many scientists recognize him as the "godfather" of this development.

Davtyan's new development for the use of noxious gases may be used with equal success in other sectors of industry, especially at the Kirovakan Chemical Plant and in large district heating plants. Its introduction into industry promises major economic advantages and, what is equally important, ensures the purity of the air over major industrial centers.

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FEDERAL REPUBLIC OF GERMANY

STRICTER ANTI POLLUTION MEASURES FOR POWER PLANTS IMPOSED

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 24 Feb 83 pp 1, 2

[Text] Bonn--23 Feb.--With the passing of the coal-burning plants decree on Wednesday, the Federal cabinet has made a further step in the direction of an improved environment. The decree makes operators of power plants responsible for taking stack gas desulfurization measures and for limiting the emission of pollutants in general. The Federal government hopes to put an end to widespread tree-kills with this measure. Sulfur dioxides are the main cause of death to spruces and firs.

After the cabinet session, Chancellor Kohl spoke about the heavy though not irreparable, damage done to German woodlands. According to Kohl, the Federal government must bring itself to take strong measures, despite the fact that not all of the causes of tree-kills have yet been investigated. According to available scientific findings, pollution, drought and animal activity are responsible for tree-kills and after years of neglect, all of the damage cannot be repaired. Kohl indicated that he would press for talks with the GDR concerning the improvement of air quality. He said that he would also bring up the subject at the June European Summit Conference in Stuttgart.

In the words of Interior Minister Zimmermann, the new decree should draw conclusions from the knowledge that power plants are the prime cause of air pollution; 56-percent of sulfur dioxides in the atmosphere come from such coal-burning plants. Operators of such plants, mainly the power companies, will be compelled to desulfurize the stack gases from their power plants and to keep the emission of all other pollutants within limits. Dust emission should be under 50 mg per cubic meter and  $NO_x$  emissions are to amount to a highest permissible concentration of 900 mg.  $SO_x$  is not to exceed an amount of 400 mg per cubic meter; the present limit is 650 mg. Sulfur contained in the plant fuel is to be reduced by at least 85 percent. Thus, only low-sulfur fuels will be used in power plants.

Zimmermann said that the plan assures that about 1,500 old plants will begin operation with stack gas desulfurization or low-sulfur fuels within the 5-year transition Period. Older plants from the 60's will be allowed only limited-capacity operation for a short period of time. This would be a clear-cut intensification as compared to the earlier decree-plan and the

recommendations of the states. Zimmermann estimated that the investment cost to power plants as a result of the decree at DM 6 to 12 billion.

In addition, the interior minister referred to the "Manual of Air Purification" (TA-Lüft), which is coming into force now and is likewise producing increased standards for air quality. In a further step, the Federal government will take up the issue of cleaner automobile emissions on a European basis. Thus, the maximum values in force today for CO and NO should be once again lowered to 70 percent.

While the environmental politicians of the coalition parties were greeting the passing of the decree as a significant step against acid rain, the Bonn opposition criticized the measure as insufficient. They say that the Federal government has debased important points in the old decree-drafts of the Schmidt/Genscher government by, for example, provision of the transition adjustment for old plants. The Hessian state government, which has joined the opposition critics, went so far on Wednesday as to speak about a "big fraud-decree." According to this position, the federal government does not want any effective measures against tree-kills. The Social Democratic environmental ministers, therefore, have urged removal of provisions for exceptions and transition periods for old plants and the passing of a "Sulfurous Emissions Bill" introduced by the Hessian Federal Council.

Bundestag representatives Hauff and Schafer gave a similar opinion: the new decree is as good as no improvement at all. "The exceptions will become the rule," said Hauff in reference to the provision for exceptions, under which the maximum value of 400 mg/cm does not have to be observed: it will actually stay at its previous level of 650 mg.

#### Intensification On a Volunteer Basis

Stuttgart, 23 Feb--Limits for the emission of pollutants from coal-burning power plants, as set by the Federal government, will be "voluntarily" increased in an arrangement between the Stuttgart state government and the power companies. The Spath government, in cooperation with representatives of the power industry, intends therefore to submit a plan by June of this year, in which an accelerated limitation of emissions will be made contingent, above all, on the nuclear power plants planned in Baden-Wurttemberg being inaugurated on schedule. If the three nuclear power plants, Philippsburg 2, Neckarwestheim 2 as well as the planned work in Wyhl go on line as projected, Spath will then press for the older coal-burning plants in the southwest to be more quickly shut down or placed in reserve, with respect to quicker desulfurization, as provided for in the Federal government's schedule. The power concept of the Stuttgart state government should also concern itself with the question of whether the coal-purchase contracts of the electrical power companies will remain unchanged even in the case of premature power plants shutdowns. According to the Stuttgart president minister, the integrated system of power producers in the southwest must, therefore, be put into order again, if necessary.

The Baden-Wurttemberg state government has also now officially advocated construction in Karlsruhe of the European high-research institute suggested by Spath, which is supposed to deal with the problems of air purification and tree-kills. According to Spath, this institute will employ between 500 and 1,000 people. The state government in Stuttgart will assume one-third of the institute's costs, provided that the FRG and the European Commonwealth assume the remainder. Spath has proposed Karlsruhe as the institute's site because the atomic research center there offers the best conditions for a crucial research point of this type. He feels that the proper background for the planned research center is provided by the Black Forest, containing over half of all the firs affected by tree-kills, the geopolitical situation of the southwest, as well as the research capacity of the University of Freiburg, which has a renowned forestry faculty.

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JOSSELIN REPORT SEES ECONOMIC ADVANTAGE TO ANTI POLLUTION EFFORTS

Investment of Fr 70 Billion Suggested

Paris LE MONDE in French 4 Feb 83 p 26

/Article by Roger Cans: "The Protection of Our Natural Heritage Is a Profitable Investment"/

/Text/ Officially recognized as a domain of government assistance since 1971, the environment is still considered, despite the crisis, as a sensitive sector to which governments action should be applied first. At least this is what the report of Plan IX's environmental task force recommends, a report prepared by Charles Josselin, (PS) deputy from Cotes-du-Nord, and made public on 1 February after being delivered to the minister of Planning and Land-Use Management, Michel Rocard.

"The protection of the environment should, less than ever, be considered a luxury, because we do not have the resources to pollute first in order to clean up later," Mr. Josselin pointed out. Hence, contrary to the view frequently held, the fight against adverse effects can represent a saving. In fact, the cost of collective wastefulness represented by pollution is estimated at Fr100 billion a year, without counting the later expenses of cleaning up. One forgets all too often that the protection of the natural heritage is also an economic activity that produces. The jobs associated with the environment today represent 370,000 people. The antipollution sector alone provides close to 200,000 jobs and achieves an annual turnover of Fr 40 billion. Research and development in the area of cleaning and purifying contributes approximately Fr 3 billion a year to the balance of foreign trade, and the environment-oriented equipment leaves a positive trade balance on the order of Fr 200 million.

The task force estimates the attainable saving in foreign exchange at Fr 3 billion if the government launches a program to recycle wastes which, in 5 years, would call for between Fr 1.5 and 2 billion in investments. The objectives would be to raise the rate of recycling waste paper to 45 percent, to reuse old tires (1 million tires being used for retreading and 250,000 tons being burned as industrial fuel), to reactivate solvents (200,000 more tons a year) and to salvage blood from slaughter houses (65,000 more cubic meters a year).

"The production of energy will be the principal source of pressure on the environment," notes the report, pointing out the shifts in hazards that are going to take place. Oil, of which the share is expected to go from 56 percent to 30 percent in 10 years, is going to pollute less (reduction in emissions of particles and sulfur); but nuclear energy, going in the same time period from 10 percent to 40 percent, is going to produce "a considerable increase in radioactive waste" (2.6 times more by 1990).

#### Noise, the Enemy

"If no additional effort of improvement is undertaken, we can expect between a 70 percent and 100 percent increase in pollution" around the year 2000. The effort should deal first with the protection of water resources, as well as the fight against noise, "the harm that affects the French the worst." Hence the suggestion of a program to soundproof that, in 5 years, is expected to make it possible to secure 250,000 housing units against highway traffic noise and 70,000 others against airport noises.

With regard to the conservation of natural spaces, the Josselin report notes that the area of regional parks has tripled since 1970, that 20,000 hectares of the coast were purchased by Conservation between 1975 and 1980 and that 26 percent of the country is now subject to protective regulation.

In order to "relaunch the national effort for the protection of the environment," Planning's task force anticipates an expenditure, between now and 1988, on the order of 70 billion francs (compared with approximately 45 billion since 1971), which would be distributed as follows: 40 billion for local communities, 10 billion for businesses, 10 billion for households and 10 billion for the government and harbor agencies. This effort would correspond to 2 percent of overall industrial investment (compared with 1.3 percent currently), or the rate already reached by Japan, the United States and West Germany.

Hence the Josselin report is assigning the government an ambitious mission of encouraging research and instigating investment. But as the most important part of the effort will involve the local communities, someone will have to explain to them that the protection of the environment is a profitable investment and convince public opinion of this. Because of this fact, the decentralization laws and the new distribution of responsibilities present a risk: that the unconvinced communes will not play Planning's game. "Decentralization is not a risk, but an opportunity for the environment," claims Mr Josselin, pointing out that an activity desired and decided on locally is always more effective than an order come from on high. There remains the desire, which can not be commanded...

#### Crepeau Comments

Paris LE MONDE in French 4 Feb 83 p 26

/Interview with Michel Crepeau, minister of the environment; date and place not specified/

/Text/ Basically Michel Crepeau, minister of environment, is in perfect agreement with the Josselin report, the conclusions of which we questioned him on.

/Question/ You are in complete agreement with the priorities determined in the Josselin report: water, noise, recyclage of wastes, and research?

/Answer/ I have not established a hierarchy. Those are fairly different phenomena there that depend on different organizations and means of implementation. If it were absolutely necessary to establish an order of priority, I would put water at the head, which is qualitatively and quantitatively the very source of life. This is precisely what the report does.

/Question/ Would you have advocated the same distribution of responsibilities to fight pollution: 40 billion on behalf of local communities, 10 billion for business, 10 billion for families and finally, 10 billion for the government and the harbor agencies?

/Answer/ These figures can only be appreciated in an overall context. They depend on the resources that local communities will be given. They depend, for households, on the standard of living which the French will have achieved by that time. What is certain is that an "environment" investment is the most profitable there is. A franc spent to counteract noise is several francs saved later by Social Security. But that is difficult to calculate.

/Question/ Aren't you afraid that the decentralization law will go against the effort required of local communities sometimes?

/Answer/ Personally, I do not think so. Public opinion, in favor of protecting the environment, is exerting more and more pressure on local elected officials. And these elected officials are more and more sensitive to it. A centralized administration in Paris did not prevent the Mediterranean coast from becoming a cement wall, nor Mr Merlin\* from making his "merlinades!" As for the local elected officials, they have often made great efforts to preserve their communities' environments. In any case, the laws being prepared will serve as a railing. The state is retaining an overall responsibility.

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\* NDLR /Editor's Note/: This is a reference to a promoter of leisure residences.

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